

FIG. 1

1 AlaSerCysLeuAsnCysSerAlaSerIleIleProAspArgGluValLeuTyrArgGlu
GGCTCCTGCTTGAAGTCTCGGCGAGCATCATACCTGACAGGGAAGTCTCTACCGAGA
CCGGAGGACGAACTTGACGAGCCGCTCGTAGTATGGACTGTCCCTTCAGGAGATGGCTCT

61 PheAspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeu
GTTTCGATGAGATGGAAGAGTGTCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCT
CAAGCTACTCTACCTTCTCAGGAGAGTCGTGAATGGCATGTAGCTCGTTCCCTACTACGA

121 AlaGluGlnPheLysGlnLysAlaLeuGlyLeu
CGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTCC
CGGGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAGG

FIG. 3

1 GlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIleProAsp
CTGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTGTCCGGGAAGCCGGCAATCATACCTG
GACCGACGCACCAGTATCACCCGTCCCAGCAGAACAGGCCCTTCGGCCGTTAGTATGGAC

61 T
ArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeuProTyr
ACAGGGAAGTCTCTACCGAGAGTTCGATGAGATGGAAGAGTGTCTCTCAGCACTTACCGT
TGTCCCTTCAGGAGATGGCTCTCAAGTACTCTACCTTCTCAGGAGAGTCGTGAATGGCA
A

121 IleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeuGln
ACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTCCTGC
TGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAGGACG

181 ThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLysLeu
AGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAGACCAACTGGCAAAAAC
TCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTTTTTG

241 GluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAlaGly
TCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATACTTGGCGG
AGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCCATGTTATGAACCGCC

301 LeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAlaVal
GCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTACAGCTGCTG
CGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAACTACCGAAAATGTCGACGAC

361 ThrSerProLeuThrThrSerGln
TCACCAGCCCACTAACCCTAGCCAAA
AGTGGTCGGGTGATTGGTGATCGGTTT



FIG. 2

5-1-1 1 [ggcctcctgcttgaaactgctcggcgagc]ATCATACCTGACAGGGGAAG
81 1 GTCCGGGAAGCCGGCAATCATACCTGACAGGGGAAG
91 1 ctggtgctggtcattagtggtcagggcggtcgctctgtccgggaagccggcaatcatatcctgacaggggaag
1-2 1 ggtcattagtggtcagggcggtcgctctgtccgggaagccggcaatcatatcctgacaggggaag
5-1-1 48 TCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGC
81 36 TCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGC
91 70 TCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGC
1-2 60 TCCTCTATCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGC
5-1-1 120 TCGCCGAGCAGTTCAAGCAGAAAGGCCCTCGGCCCTCC
81 108 TCGCCGAGCAGTTCAAGCAGAAAGGCCCTCGGCCCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCC
91 142 TCGCCGAGCAGTTCAAGCAGAAAGGCCCTCGGCCCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCC
1-2 132 TCGCCGAGCAGTTCAAGCAGAAAGGCCCTCGGCC
81 180 CTGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGA
91 214 CTGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGA
81 252 TACAATACTTGGCGGGCTTGTCAACGCTGCCTGGtaaccccgccattgcttattgagtggttttacagctg
91 286 TACAATACTTGGCGGGCTTGTCAACGCTGCCTGG
81 324 ctgtcaccagcccactaaccactagccaaa

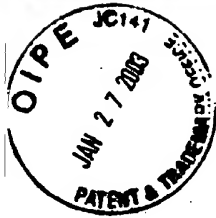


FIG. 4

SerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMet
1 GTCCGGGAAGCCGCAATCATACCTGACAGGGAAGTCCCTCTACCGAGAGTTCGATGAGAT
CAGGCCCTTCGGCCGTTAGTAGTATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTA

GluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPhe
61 GGAAGAGTGTCTCTCAGCACTTACCGTACATCGAGCAAGGATGATGCTCGCCGAGCAGTT
CCTTCTCAGAGAGTCGTGAATGGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAA

LysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaPro
121 CAAGCAGAAGCCCTCGGCTCTCTGCAGACCGCTCCGTCCGTCCGTCAGGAGAGTTATCGCCCC
GTTCGTCTTCGGGAGCCGGAGGACGTCTGGCGCAGGAGTCCGTCTCCAATAGCGGGG

AlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPhe
181 TGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTGGCGGAAGCATATGTGGAACCTT
ACGACAGGTCTGGTTGACCGTTTGTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAA

IleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAla
241 CATCAGTGGATACAATACTTGGCGGGCTTGTCAACGCTGCCCTGGTAACCCCGCATTGC
GTAGTCACCCCTATGTTATGAACCGCCCGAACAGTTGCGACGGACCATTTGGGCGGTAAACG

SerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
301 TTCATTGATGGCTTTTACAGCTGCTGTCAACGACCCACATAACCACTAGCCAAA
AAGTAACTACCGAAAAATGTCGACGACAGTGTGGGTGATTGGTGATCGGTTT

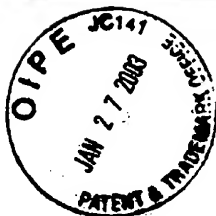


FIG. 5

AspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAla
1 GATGCCCACTTCTATCCAGACAAGCAGAGTGGGAGAACCCTTCCTTACCTGGTAGCG
CTACGGGTGAAAGATAGGGTCTGTTTCGTCTCACCCCTCTTGGAAGGAATGGACCATCGC
TyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrp
61 TACCAAGCCACCCTGTGCGCTAGGGCTCAAGCCCTCCCCCATCGTGGGACCATGTGG
ATGGTTCGGTGGCACACGCGATCCCGAGTTCGGGAGGGGTAGCACCCCTGGTCTACACC
LysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeu
121 AAGTGTTCGATTCGCCCTCAAGCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTG
TTCACAAACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGACGATATGCTCTGAC
GlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCys
181 GCGGCTGTTTCAGAAATGAATCACCCCTGACGCACCCAGTCACCAATAACATCATGACATGC
CCGCCACAAGTCTTACTTTAGTGGGACTGCGTGGTCAGTGGTTTATGTAGTACTGTACG
MetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAla
241 ATGTCGGCCGACCTGGAGTCTGTCACGAGCACCTGGTGTCTGTTGGCGGCTCCTGGCT
TACAGCCGGCTGGACCTCCAGCAGTCTCGTGGACCCACGAGCAACCGCCGAGGACCCGA
AlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeu
301 GCTTTGGCCGCGTATTGCCCTGTCAACAGGCTGCGTGGTCATAGTGGCAGGGTCTCTTG
CGAAACCGGCGCATAAACGGACAGTGTCCGACGCACCATATCACCCGTCCTCCAGCAGAAC
-----Overlap with 81-----
SerGlyLysProAlaIleIleProAspArgGluValLeuTyrArg
361 TCCGGGAAGCCGGCAATCATACCTGACAGGGAAGTCTCTACCCGAG
AGGCCCTTCGGCCGTTAGTATGGACTGTCCCTTCAGGAGATGGCTC



FIG. 6

AspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAla
1 GATGCCCACTTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGGTAGCG
CTACGGGTGAAAGATAGGGTCTGTTTCGTCTCACCCCTCTTGGAAGGAATGGACCATCGC

TyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrp
61 TACCAAGCCACCGTGTGCGCTAGGGCTCAAGCCCTCCCCATCGTGGGACCAGATGTGG
ATGGTTCGGTGGCACACGCGATCCCGAGTTCGGGGAGGGGGTAGCACCTGGTCTACACC

LysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeu
121 AAGTGTGTTGATTGCGCTCAAGCCACCTCCATGGGCCAACACCCCTGCTATACAGACTG
TTCACAACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGAC

GlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCys
181 GGCGCTGTTTCAAGATGAAATCACCTGACGCACCCAGTCACCAAATACATCATGACATGC
CCGCGACAAGTCTTACTTTAGTGGGACTGCGTGGGTGAGTGGTGTATGTAGTACTGTACG

MetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAla
241 ATGTCGGCCGACCTGGAGGTGCTCAGAGCACCTGGGTGCTCGTTGGGGCGTCTGGCT
TACAGCCGGCTGGACCTCCAGCAGTGTCTGAGACCCACGAGCAACCGCCGAGGACCGA

AlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeu
301 GCTTTGGCCGCGTATTGCTGTCAACAGGCTGCGTGGTTCATAGTGGGCAGGGTCTGCTTG
CGAAACCGGCGCATAACGGACAGTTGTCGACGACCCAGTATCACCCGTCCCAGCAGAAC

SerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMet
361 TCCCGGAAGCCGCAATCATACCTGACAGGGAAGTCCTCTACCGAGAGTTTCGATGAGATG
AGGCCCTTCGGCCGTTAGTATGGACTGTCCCTCAGGAGATGGCTCTCAAGCTACTCTAC

GluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPhe
421 GAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTC
CTTCTCAGAGAGTCTGTAATGGCATGTAGCTCGTTCCTACTACGAGCGGCTCGTCAAG

LysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaPro
481 AAGCAGAAGGCCCTCGGCCTCCTGCAGACCGCTCCGTCAGGCAGAGGTTATCGCCCCCT
TTCGTCTTCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGA

AlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPhe
541 GCTGTCCAGACCAACTGGCAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTC
CGACAGGTCTGGTTGACCGTTTTTGTAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAG

IleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAla
601 ATCAGTGGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCT
TAGTCACCTATGTTATGAACCGCCCAACAGTTGCGACGGACCATGGGGCGGTAACGA

SerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
661 TCATTGATGGCTTTTACAGCTGCTGTACACAGCCCACTAACCCTAGCCAAA
AGTAACTACCGAAAATGTGACGACAGTGGTGGGTGATTGGTGATCGGTTT

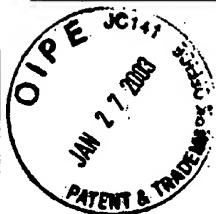


FIG. 7

-----Overlap with 81-----
PheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeu
1 CTTTTACAGCTGCTGTCACCAGCCCACTAACCCTAGCCAAACCCTCCTCTTCAACATAT .
GAAAATGTCGACGACAGTGGTGGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATA

GlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAla
61 TGGGGGGGTGGGTGGCTGCCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTGGGCG
ACCCCCCACCACCGACGGGTGAGCGGGGGGCCACGGCGATGACGGAACACCCGC

GlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeu
121 CTGGCTTAGCTGGCGCCGCCATCGGCAGTGTGGACTGGGGAAGGTCTTCATAGACATCC
GACCGAATCGACCGCGCGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTGTAGG

AlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGlu
181 TTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTG
AACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCAC

ValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeu
241 AGGTCCCCCTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCC
TCCAGGGGAGGTGCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGG

ValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAla
301 TCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGG
AGCATCAGCCGCACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCCGCTCCCC

ValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
361 CAGTGCAGTGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGAACCATGTTTCCCC
GTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGG



FIG. 8A

SerIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
1 TCCATTGAGACAATCACGCTCCCCAGGATGCTCTCCCGCACTCAACGTCGGGGCAGG
AGGTAACCTCTGTAGTCGAGGGGTCTTACGACAGAGGGCGTGAGTTGCAGCCCCCGTCC

ThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGly
61 ACTGGCAGGGGAAGCCAGGCATCTACAGATTGTGGCACCGGGGAGCGCCCTCCGGC
TGACCGTCCCCCTTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGGGGGAGGCCG

MetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeu
121 ATGTTCCGACTCGTCCGTCTCTGTGAGTGCTATGACGAGGCTGTGCTTGGTATGAGCTC
TACAAGCTGAGCAGGACGAGACACTCACGATACTGCGTCCGACACGAACCATCTCGAG

ThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProVal
181 ACGCCCGCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCCCGGGCTTCCCCGTG
TGCGGGCGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCCGAAGGGCAC



FIG. 8B

CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
241 TGCCAGGACCATCTTGAATTTGGAGGGCGTCTTTACAGGCCCTCACTCATATAGATGCC
ACGGTCCCTGGTAGAACTTAAACCCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGG

HisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGln
301 CACTTTCTATCCAGACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGCTAGCGTACCAA
GTGAAAGATAGGGTCTGTTTCGTCTCACCCCTCTTGGAAGGAATGGACCATCGCATGGTT

-----Overlap with 36-----
AlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCys
361 GCCACCGTGTGGCTAGGGCTCAAGCCCCCTCCCCCATCGTGGGACCAGATGTGGAAGTGT
CGGTGGCACACGGGATCCCGAGTTCGGGAGGGGTAGCACCCCTGGTCTACACCTTCACA

LeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAla
421 TTGATTCGCCCTCAAGCCCAACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCT
AACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCCGCA

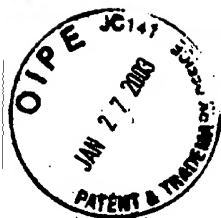


FIG. 9A

1 SerIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
TCCATTGAGACAATCACGCTCCCCAGGATGCTGTCTCCCGCACTCAACGTCGGGGCAGG
AGGTAACCTCTGTTAGTGCGAGGGGGTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCC

61 ThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGly
ACTGGCAGGGGGAAGCCAGGCATCTACAGATTTGTGGCACCAGGGGAGCGCCCTCCGGC
TGACCGTCCCCCTTCGGTCCGTAGATGTCTAACACCGTGCCCCCTCGCGGGGAGGCCG

121 MetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeu
ATGTTCCGACTCGTCCGTCTCTGTGAGTGCTATGACGCAAGGCTGTGCTTGGTATGAGCTC
TACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAG

181 ThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProVal
ACGCCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTG
TGCGGGCGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCAG

241 CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
TGCCAGGACCATCTTGAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCC
ACGGTCTTGGTAGAACTTAAACCCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGG

301 HisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGln
CACTTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACCAA
GTGAAAGATAGGGTCTGTTTCGTCTACCCCTCTTGGAGGAATGGACCATCGCATGGTT

361 AlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCys
GCCACCGTGTGCGCTAGGGCTCAAGCCCCCTCCCCATCGTGGGACCAGATGTGGAAGTGT
CGGTGGCACACGCGATCCCGAGTTCGGGGAGGGGGTAGCACCTGGTCTACACCTTACA

421 LeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTryArgLeuGlyAla
TTGATTGCGCTCAAGCCCACCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCT
AATAAGCGGAGTTTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGA

481 ValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSer
GTTTCAGAAATGAAATCACCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTCTG
CAAGTCTTACTTTAGTGGGACTGCGTGGGTCAGTGGTTTATGTAGTACTGTACGTACAGC

541 AlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeu
GCCGACCTGGAGGTGCTCACGAGCACCTGGGTGCTCGTTGGCGGCGTCTGGCTGCTTTG
CGGCTGGACCTCCAGCAGTGCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAAC

601 AlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGly
GCCGCGTATTGCCTGTCAACAGGCTGCGTGGTCAAGTGGGCAGGGTCTGCTTGTCCGGG
CGGCGCATAACGGACAGTTGTCCGACGCACCAAGTATCACCCGTCCAGCAGAACAGGCC

661 LysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGlu
AAGCCGGCAATCATACCTGACAGGGAAGTCTCTACCGAGAGTTTCATGAGATGGAAGAG
TTCGGCCGTTAGTATGGACTGTCCCTTACGGAGATGGCTCTCAAGCTACTCTACCTTCTC

721 CysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGln
TGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAG
ACGAGAGTCTGAATGGCATGTAGCTCGTTCCTACTACGAGCGGCTCGTCAAGTTCGT

781 LysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaVal
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TTCCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAG

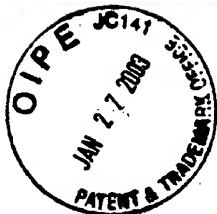


FIG. 9B

841 GlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSer
CAGACCAACTGGCAAAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGT
GTCTGGTTGACCGTTTTTGGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCA

901 GlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeu
GGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTG
CCCTATGTTATGAACGCGCCGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAAC

961 MetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsn
ATGGCTTTTACAGCTGCTGTCACCAAGCCCACTAACCCTAGCCAAACCTCCTCTTCAAC
TACCGAAAATGTCGACGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGACAAGTTG

1021 IleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheVal
ATATTGGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTG
TATAACCCCCCAACCGACGGGTGAGCGGGCGGGGGCCACGGCGATGACGGAAACAC

1081 GlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAsp
GGCGCTGGCTTAGCTGGCGCCGCCATCGGCAGTGTGGACTGGGGAAGGTCTCATAGAC
CCGCGACCGAATCGACCGCGGGCGGTAGCCGTACAACTGACCCCTTCCAGGAGTATCTG

1141 IleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSer
ATCCTTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGC
TAGGAACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTG

1201 GlyGluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGly
GGTGAGGTCCCCTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGA
CCACTCCAGGGGAGGTGCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCGGGCCT

1261 AlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGlu
GCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAG
CGGGAGCATCAGCCGCACCAAGACACGTCGTTATGACGCGGGCGGTGAACCGGGCCCGCTC

1321 GlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
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CCCCGTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGG

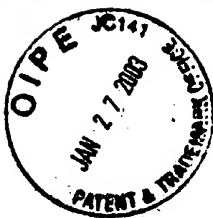


FIG. 10

LeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAsp
1 CTCGCCGCAAGCTGGTCGCAATTGGGCATCAATGCCGTGGCCTACTACCGCGTCTTGAC
GAGCGCGTTTCGACCCAGCGTAACCCGTAGTTACGGCACCGGATGATGGCGCCAGAACTG

ValSerValIleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThr
61 GTGTCCGTATCCCGACCCAGCGCGATGTGTGTCGTGGCAACCGATGCCCTCATGACC
CACAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCACCGTTGGCTACGGGAGTACTGG

GlyTyrThrGlyAspPheAspSerValIleAspTyrAsnThrCysValThrGlnThrVal
121 GGCTATACCGCGACTTCGACTCGGTGATAGACTACAATACGTGTGTCAACCCAGACAGTC
CCGATATGGCCGCTGAAGCTGAGCCACTATCTGATGTATGCACACAGTGGTCTGTCTAG

-----Overlap with
AspPheSerLeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaVal
181 GATTTCAGCCTTGACCCCTACCTTCACCAATTGAGACAATCACGCTCCCCCAGGATGCTGTC
CTAAAGTCGGAACCTGGGATGGAAGTGTAACCTCTGTAGTCCGAGGGGGTCTTACGACAG

clone 35-----
SerArgThrGlnArgArgGlyArgThr
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AGGCGGTGAGTTGCAGCCCCCGTCTTGAC

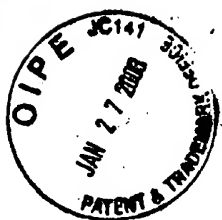


FIG. 11

-----Overlap with 32-----
1 MetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrVal
GATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCCACGCACTACGT
CTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCGTGATGCA
61 ProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGln
GCCGGAGAGCGATGCAGCTGCCCCGCTCACTGCCATACTCAGCAGCCTCACTGTAACCCA
CGGCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGTCGGAGTGACATTGGGT
121 LeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySer
GCTCCTGAGGCGACTGCACCAAGTGATAAGCTCGGAGTGTACCACTCCATGCTCCGGTTC
CGAGGACTCCGCTGACGTGGTCACCTATTTCGAGCCTCACATGGTGAGGTACGAGGCCAAG
181 TrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeu
CTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGGCT
GACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACCTCGCTGAAATTCTGGACCGA
241 LysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyr
AAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCTTTGTGTCTGCCAGCGCGGGTA
TTTTCGATTGAGTACGGTGTCGACGGACCCTAGGGGAAACACAGGACGGTTCGCGCCCAT
301 LysGlyValTrpArgVal
TAAGGGGGTCTGGCGAGTG
ATTCCCCCAGACCGCTCAC

AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
 1 GGCTTACATGTCCTCAAGGCTCATGGATCGATCCTAACAATCAGGACCGGGTGAGAACAAAT
 CCGAATGTACAGGTTCCGAGTACCCCTAGTAGGATGTAGTCTCTGCCCCACTCTTGTTA
 ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
 61 TACCACTGGCAGCCCCATCAGTACTCCACCTACGCAAGTTCCTTGCCGACGGCGGTG
 ATGGTGACCGTCGGGTAGTGCAATGAGGTGGATGCCGTTCAAGAACGGCTGCCGCCAC
 SerGlyGlyAlaTyrAspIleIleCysAspGluCysHisSerThrAspAlaThrSer
 121 CTCGGGGGGCGCTTATGACATAATAATTGTGACGAGTGCCACTCCACGGATGCCACATC
 GAGCCCCCGCGAATACTGTATTATTAAACACTGCTCAGGTGAGGTGCCCTACGGTGTAG
 IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
 181 CATCTTGGGCATCGGCACCTGCTCTGACCAAGCAGAGACTGCGGGGCGAGACTGGTTGT
 GTAGAACCCGTAGCCGTGACAGGAACCTGTTCTCTGACGCCCCCGCTCTGACCAACA
 LeuAlaThrAlaThrProGlySerValThrValProHisProAsnIleGluValVal
 241 GCTCGCCACCGCCACCCCTCCGGGCTCCGTCACTGTGCCCCCATCCCAACATCGAGGAGGT
 CGAGCGGTGGCGGTGGGAGGCCCGAGGCAGTGACACGGGTAGGTTGTAGCTCCTCCA
 AlaLeuSerThrThrGlyGluIleProPheThrGlyLysAlaIleProLeuGluValIle
 301 TGCTCTGTCCACCAACCGGAGAGATCCCTTTTACGGCAAGGCTATCCCCCTCGAAGTAAT
 ACGAGACAGGTGGTGGCCTCTCTAGGGAAATAATGCCGTTCCGATAGGGGAGCTTCATTA
 -----Overlap with 37b-----
 LysGlyGlyArgHisLeuIlePheCysHisSerLysLysLysCysAspGluLeuAlaAla
 361 CAAGGGGGGAGACATCTCATCTTCTGTCTCATTTCAAAGAAGAAGTGCAGCAACTCGCCGC
 GTTCCCCCCTCTGTAGAGTAGAAGACAGTAAGTTTCTTCTCACGCTGCTTGAGCGGCG
 LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
 421 AAAGCTGGTCGCATGGGCATCAATGCCGTGGCCCTACTACCGCGTCTTGACGCTGTCCGT
 TTTCGACCGGTAAACCGTAGTTACGGCACCGGATGATGGCGCCAGAACTGCACAGGCA

 IleProThr
 481 CATCCCGACACAG
 GTAGGGCTGGTC

FIG. 12



FIG. 13

1 CysSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCys
ACTGCAGCCTCACTGTAACCCAGCTCCTGAGGCGACTGCACCAGTGGATAAGCTCGGAGT
TGACGTGGAGTGACATTGGGTTCGAGGACTCCGCTGACGTGGTCACCTATTTCGAGCCTCA

61 ThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeu
GTACCACTCCATGCTCCGGTTCCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGT
CATGGTGAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCTGACCTATACGCTCCACA.

121 SerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGlyIleProPhe
TGAGCGACTTTAAGACCTGGCTAAAAGCTAAGCTCATGCCACAGCTGCCCTGGGATCCCCCT
ACTCGCTGAAATTCTGGACCGATTTTCGATTTCGAGTACGGTGTGACGGACCCTAGGGGA

181 ValSerCysGlnArgGlyTyrLysGlyValTrpArgGlyAspGlyIleMetHisThrArg
TTGTGTCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGGGGACGGCATCATGCACACTC
AACACAGGACGGTCGCGCCCATATTCCCCCAGACCGCTCCCCTGCCGTAGTACGTGTGAG

241 CysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArgIleValGly
GCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCCG
CGACGGTGACACCTCGACTCTAGTGACCTGTACAGTTTTTGCCCTGCTACTCTAGCAGC

301 ProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGly
GTCCTAGGACCTGCAGGAACATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGG
CAGGATCCTGGACGTCCTGTACACCTACCCCTGGAAGGGTAATTACGGATGTGGTGCC

361 ProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGlu
GCCCCGTGTACCCCCCTTCCTGCGCCGAACCTACACGTTTCGCGCTATGGAGGGTGTCTGCAG
CGGGGACATGGGGGAAGGACGCGGCTTGATGTGCAAGCGGATACCTCCCACAGACGTC

421 GluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAsp
AGGAATATGTGGAGATAAGGCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTG
TCCTTATACACCTCTATTCCGTCCACCCCTGAAGGTGATGCACTGCCATACTGATGAC

481 AsnLeuLysCysProCysGlnValProSerProGluPhePheThrGlu
ACAATCTCAAATGCCCCGTGCCAGGTCCCATCGCCGAATTTTTTCACAGAAT
TGTTAGAGTTTACGGGCACGGTCCAGGGTAGCGGGCTTAAAAAGTGCTTA



FIG. 14A

AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
1 TGCTTACATGTCCAAGGCTCATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAAAT
ACGAATGTACAGGTTCCGAGTACCCTAGCTAGGATTGTAGTCTGGCCCCACTCTTGTTA

ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
61 TACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTTCTTGCCGACGGCGGGTG
ATGGTGACCGTCGGGGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCAC

SerGlyGlyAlaTyrAspIleIleIleCysAspGluCysHisSerThrAspAlaThrSer
121 CTCGGGGGGCGCTTATGACATAATAATTTGTGACGAGTGCCACTCCACGGATGCCACATC
GAGCCCCCGCAATACTGTATTATTAACACTGCTCACGGTGAGGTGCCACGGTGTAG

IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
181 CATCTTGGGCATCGGCACTGTCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGT
GTAGAACCCGTAGCCGTGACAGAACTGGTTCGTCTGACGCCCCCGCTCTGACCAACA

LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluGluVal
241 GCTCGCCACC GCCACCCCTCCGGGCTCCGTCACGTGCCCCATCCCAACATCGAGGAGGT
CGAGCGGTGGCGGTGGGGAGGCCGAGGCAGTGACACGGGGTAGGGTTGTAGCTCCTCCA

AlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIle
301 TGCTCTGTCCACCACCGGAGAGATCCCTTTTTACGGCAAGGCTATCCCCCTCGAAGTAAT
ACGAGACAGGTGGTGGCCTCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATTA

LysGlyGlyArgHisLeuIlePheCysHisSerLysLysLysCysAspGluLeuAlaAla
361 CAAGGGGGGGGAGACATCTCATCTTCTGTCAATCAAAGAAGAAGTGCACGAACTCGCCGC
GTTCCCCCCTCTGTAGAGTAGAAGACAGTAAGTTTCTTCTTACGCTGCTTGAGCGGC

LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
421 AAAGCTGGTGCATTGGGCATCAATGCCGTGGCCTACTACCGCGGTCTTGACGTGTCCGT
TTTCGACCAGCGTAACCCGTAGTTACGGCACCGGATGATGGCGCCAGAACTGCACAGGCA

IleProThrSerGlyAspValValValValAlaThrAspAlaLeuMetThrGlyTyrThr
481 CATCCCAGCAGCGCGATGTTGTCGTGTCGCAACCGATGCCCTCATGACCGGCTATAC
GTAGGGCTGGTCGCCCTACAACAGCAGCACCGTTGGCTACGGGAGTACTGGCCGATATG

GlyAspPheAspSerValIleAspTyrAsnThrCysValThrGlnThrValAspPheSer
541 CGGCGACTTCGACTCGGTGATAGACTACAATACGTGTGTCAACCAGACAGTCGATTTTCAG
GCCGCTGAAGCTGAGCCACTATCTGATGTTATGCACACAGTGGGTCTGTCACTAAAGTC

LeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThr
601 CCTTGACCCTACCTTCACCATGAGACAATCACGCTCCCCAGGATGCTGTCTCCCGCAC
GGAAGTGGGATGGAAGTGGTAACCTCTGTTAGTGCGAGGGGGTCTACGACAGAGGGCGTG

GlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGly
661 TCAACGTCGGGGCAGGACTGGCAGGGGGAAGCCAGGCATCTACAGATTTGTGGCACC GGG
AGTTGCAGCCCCCTCTGACCGTCCCCCTTCGGTCCGTAGATGTCTAAACACCGTGGCCC

GluArgProSerGlyMetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCys
721 GGAGCGCCCCCTCCGGCATGTTGACTCGTCCGTCCTCTGTGAGTGCTATGACGAGGCTG
CCTCGCGGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGAC

AlaTrpTyrGluLeuThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThr
781 TGCTTGGTATGAGCTACGCCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACAC
ACGAACCACTCGAGTGCGGGCGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGTG

ProGlyLeuProValCysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeu
841 CCCGGGGCTTCCCGTGTGCCAGGACCATCTTGAATTTTGGGAGGGCGTCTTTACAGGCCCT
GGGCCCCGAAGGGCACACGGTCTGGTAGAACTTAAACCTCCCGCAGAAATGTCCGGA

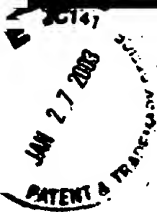


FIG. 14B

ThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAspLeuProTyr
901 CACTCATATAGATGCCCACTTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTTCCTTA
GTGAGTATATCTACGGGTGAAAGATAGGGTCTGTTTCGTCTCACCCCTCTTGGAAGGAAT

LeuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAsp
961 CCTGGTAGCGTACCAAGCCACCGTGTGCGCTAGGGCTCAAGCCCCTCCCCATCGTGGGA
GGACCATCGCATGGTTCGGTGGCACACGCGATCCCGAGTTCGGGGAGGGGGTAGCACCT

GlnMetTrpLysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeu
1021 CCAGATGTGGAAGTGTGTTGATTGCGCTCAAGCCCACCCTCCATGGGCCAACACCCCTGCT
GGTCTACACCTTCACAACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGGACGA

TyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIle
1081 ATACAGACTGGGCGCTGTTTCAAGATGAAATCACCTGACGCACCCAGTCACCAAATACAT
TATGCTGACCCGCGACAAGTCTTACTTTAGTGGGACTGCGTGGGTCACTGGTTTATGTA

MetThrCysMetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGly
1141 CATGACATGCATGTCGGCCGACCTGGAGGTGCTCACGAGCACCTGGGTGCTGTTGGCGG
GTACTGTACGTACAGCCGGCTGGACCTCCAGCAGTGTCTGTTGGACCCACGAGCAACCGCC

ValLeuAlaAlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArg
1201 CGTCCTGGCTGCTTTGGCCGCGTATTGCTGTCAACAGGCTGCGTGGTCATAGTGGGCAG
GCAGGACCGACGAAACCGGCGCATAACGGACAGTTGTCCGACGCACCAAGTATCACCCGTC

ValValLeuSerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPhe
1261 GGTGCTCTTGTCGGGAAGCCGGCAATCATACCTGACAGGGAAGTCTCTACCGAGAGTT
CCAGCAGAACAGGCCCTTCGGCCGTTAGTATGGACTGTCCCTTCAGGAGATGGCTCTCAA

AspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAla
1321 CGATGAGATGGAAGAGTGTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGC
GCTACTCTACCTTCTCACGAGAGTCGTGAATGGCATGTAGCTCGTTCCCTACTACGAGCG

GluGlnPheLysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluVal
1381 CGAGCAGTTCAAGCAGAAAGGCCCTCGGCCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGT
GCTCGTCAAGTTCGTCTTCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCA

IleAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMet
1441 TATCGCCCCTGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTGGGCGAAGCATAT
ATAGCGGGGACGACAGGTCTGGTTGACCGTTTTTGGACTCTGGAAGACCCGCTTCGTATA

TrpAsnPheIleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnPro
1501 GTGGAACCTTCATCAGTGGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCC
CACCTTGAAGTAGTCACCTATGTTATGAACCGCCCGAACAGTTGCGACGGACCATGGG

AlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
1561 CGCCATTGCTTCATTGATGGCTTTTACAGCTGCTGTACCAAGCCCACTAACCACTAGCCA
GCGGTAACGAAGTAACCTACCGAAAATGTCGACGACAGTGGTCGGGTGATTGTTGATCGGT

ThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAla
1621 AACCCCTCCTCTTCAACATATTGGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCCCGGGTGC
TTGGGAGGAGAAGTTGTATAACCCCCCACCACCGACGGGTGAGCGGGGGGGGCCACG

AlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGly
1681 CGCTACTGCCTTTGTGGGCGCTGGCTTAGCTGGCGCCGCGCATCGGCAGTGTGGACTGGG
GCGATGACGGAACACCCGCGACCGAATCGACCGCGCGGTAGCCGTACAACCTGACCC



FIG. 14C

LysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAla
1741 GAAGGTCCTCATAGACATCCTTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGC
CTTCCAGGAGTATCTGTAGGAACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACCG

PheLysIleMetSerGlyGluValProSerThrGluAspLeuValAsnLeuLeuProAla
1801 ATTCAAGATCATGAGCGGTGAGGTCCCCTCCACGGAGGACCTGGTCAATCTACTGCCCGC
TAAGTTCTAGTACTCGCCACTCCAGGGGAGGTGCCTCCTGGACCAGTTAGATGACGGGCG

IleLeuSerProGlyAlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHis
1861 CATCCTCTCGCCCGAGCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCCCGGCA
GTAGGAGAGCGGGCTCGGGAGCATCAGCCGCACCAGACACGTCGTTATGACGCGGGCGT

ValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArg
1921 CGTTGGCCCGGGCGAGGGGGCAGTGCAAGTGAACCGGCTGATAGCCTTCGCCTCCCG
GCAACCGGGCCCGCTCCCCCGTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGGC

GlyAsnHisValSerProThrHisTyrValProGluSerAspAlaAlaAlaArgValThr
1981 GGGGAACCATGTTTCCCCCAGCACTACGTGCCGGAGAGCGATGCAGCTGCCCGCGTCAC
CCCCTTGGTACAAAGGGGGTGCCTGATGCACGGCCTCTCGCTACGTCGACGGGCGCAGTG

AlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSer
2041 TGCCATACTCAGCAGCCTCACTGTAACCCAGCTCCTGAGGCGACTGCACCAGTGGATAAG
ACGGTATGAGTCGTCGGAGTGACATTGGGTGAGGACTCCGCTGACGTGGTCACCTATTC

SerGluCysThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCys
2101 CTCGGAGTGTAACCACTCCATGCTCCGGTTCCTGGCTAAGGGACATCTGGGACTGGATATG *
GAGCCTCACATGGTGAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCTGACCTATAC

GluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGly
2161 CGAGGTGTTGAGCGACTTTAAGACCTGGCTAAAAGCTAAGCTCATGCCACAGCTGCCCTGG
GCTCCACAACCTCGCTGAAATTCTGGACCGATTTTCGATTGAGTACGGTGTGACGGGACC

IleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMet
2221 GATCCCTTTGTGTCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGTGGACGGCATCAT
CTAGGGGAAACACAGGACGGTCGCGCCCATATTCCCCAGACCGCTCACCTGCCGTAGTA

HisThrArgCysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArg
2281 GCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGAG
CGTGTGAGCGACGGTGACACCTCGACTCTAGTGACCTGTACAGTTTTTGCCCTGCTACTC

IleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyr
2341 GATCGTCGGTCCTAGGACCTGCAGGAACATGTGGAGTGGGACCTTCCCCATTAATGCCTA
CTAGCAGCCAGGATCCTGGACGTCCTTGACACCTCACCTGGAAGGGGTAATTACGGAT

ThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgVal
2401 CACCACGGGCCCCTGTACCCCTTCTGCGCCGAACACACGTTGCGCTATGGAGGGT
GTGGTGCCCGGGGACATGGGGGAAGGACGCGGCTTGATGTGCAAGCGGATACCTCCA

SerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMet
2461 GTCTGCAGAGGAATATGTGGAGATAAGGCAGGTGGGGGACTTCCACTACGTGACGGGTAT
CAGACGTCTCCTTATACACCTCTATTCCGTCCACCCCTGAAGGTGATGCACTGCCATA

ThrThrAspAsnLeuLysCysProCysGlnValProSerProGluPhePheThrGlu
2521 GACTACTGACAATCTCAAATGCCCGTGCCAGGTCCCATGCCCGAATTTTTCACAGAAT
CTGATGACTGTTAGAGTTTACGGGCACGGTCCAGGGTAGCGGGCTAAAAAGTGTCTTA



FIG. 15

AlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThr
1 GGC GGT GGA CTTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCGGTGTTCCAC
CCGCCACCTGAAATAGGGACACCTCTTGGATCTCTGTTGGTACTCCAGGGGCCACAAGTG

AspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaPro
61 GGATAACTCCTCTCCACCAAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCC
CCTATTGAGGAGAGGTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGG

ThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysVal
121 CACAGGCAGCGGCAAAAGCACCAAGGTCCCGGTGCATATGCAGCTCAGGGCTATAAGGT
GTGTCCGTCGCCGTTTTCTGTGGTTCCAGGGCCGACGTATACGTCGAGTCCCGATATTCCA

LeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAla
181 GCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGC
CGATCATGAGTTGGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCG

-----Overlap with 40b-----
HisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIle
241 TCATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAAATTACCACTGGCAGCCCCAT
AGTACCCTAGCTAGGATTGTAGTCTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTA

ThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAsp
301 CACGTACTCCACCTACGGCAAGTTCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGA
GTGTCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCAATACT

IleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThr
361 CATAATAATTTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATTGGCAC
GTATTATTAAACACTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTG

ValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrPro
421 TGTCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCC
ACAGGAACCTGGTTCTCTGACGCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGG

ProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGly
481 TCCGGGCTCCGTCCTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGG
AGGCCCCAGGCAGTGACACGGGGTAGGGTTGTAGCTCTCCAACGAGACAGGTGGTGGCC

GluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeu
541 AGAGATCCCTTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCT
TCTCTAGGGAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCTCTGTAGA

IlePheCysHisSerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGly
601 CATCTTCTGTCAATCAAAGAAGAAGTGCGACGAACTCGCCGCAAAGCTGGTCGCATTGGG
GTAGAAGACAGTAAGTTTCTTCTTACGCTGCTTGAGCGGCGTTTCGACCAAGCGTAACCC

IleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAsp
661 CATCAATGCCGTGGCCTACTACCGCGGTCTTGACGTGTCCGTATCCCGACCAAGCGGCGA
GTAGTTACGGCACCAGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCT

ValValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerVal
721 TGTTGTCGTCGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGT
ACAACAGCAGCACC6TTG6CTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCA

IleAspCysAsnThrCys
781 GATAGACTGCAATACGTGTG
CTATCTGACGTTATGCACAC



FIG. 16

ProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIlePro
1 CTCCTGCACTTGCGGCTCCTCGGACCTTTACCTGGTCACGAGGCACGCCGATGTCATT
GAGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCACTGCTCCGTGCGGCTACAGTAAG
ValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyrLeu
61 CCGTGCGCGCGCGGGGTGATAGCAGGGGCGAGCCTGCTGTCGCCCCGGGCCATTTCTACT
GGCAGCGCGCGCGGCCACTATCGTCCCCGTGCGACGACAGCGGGGCCGGGTAAAGGATGA
LysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePheArg
121 TGAAGGCTCCTCGGGGGGTCCGCTGTTGTGCCCCGCGGGGACGCCGTGGGCATATTTA
ACTTTCCGAGGAGCCCCCAGGCGACAACACGGGGCGCCCCGTGCGGCACCCGTATAAAT
-----Overlap with
AlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIleProValGluAsnLeu
181 GGGCGCGGTGTGCACCCGTGGAGTGGCTAAGGCGGTGGACTTTATCCCTGTGGAGAACC
CCCGGCGCCACACGTGGGCACCTCACCGATTCCGCCACCTGAAATAGGGACACCTCTTGG
33c-----
GluThrThrMetArgSerProValPheThrAspAsnSer
241 TAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTCCTC
ATCTCTGTTGGTACTCCAGGGGCCACAAGTGCCTATTGAGGAG

FIG. 17

GlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGly
1 GGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCAGCAGACAAGGGGCTCTAGG
CCCCACCTCCAACGACCGCGGGTAGTGCCGCATGCGGGTCTGTTCCCCGGAGGATCC
CysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIle
61 GTGCATAATCACCAGCCTAACTGGCCGGGACAAAAACCAAGTGGAGGGTGAGGTCCAGAT
CACGTATTAGTGGTCGGATTGACGGCCCTGTTTTTGGTTCACTCCCACTCCAGGTCTA
ValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThrVal
121 TGTGTCAACTGCTGCCCCAACCTTCTGGCAACGTGCATCAATGGGGTGTGCTGGACTGT
ACACAGTTGACGACGGGTTTGGAAAGGACCGTTGCACGTAGTTACCCACACGACCTGACA
TyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyProValIleGlnMetTyr
181 CTACCACGGGGCCGGAACGAGGACCATCGCGTCACCCAAGGGTCTGTCTATCCAGATGTA
GATGGTGCCCCGGCCTTGCTCCTGGTAGCGAGTGGGTTCCCAAGGACAGTAGGTCTACAT
ThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeuThr
241 TACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCCGCAAGGTAGCCGCTCATTGAC
ATGGTTACATCTGTTCTGGAACACCCGACCGGGCGAGGCGTTCCATCGGCGAGTAAGT
-----Overlap with 8h-----
ProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHis
301 ACCCTGCACTTGCGGCTCCTCGGACCTTTACCTGGTCACGAGGCACG
TGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCACTGCTCCGTGC



FIG. 18

1 AsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeu
GAACATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCTGTACCCCCCT
CTTGACACCTCACCCTGGAAGGGTAATTACGGATGTGGTGGCCGGGGACATGGGGGA
-----Overlap with 25c-----
61 ProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIle
TCCTGCGCCGAACCTACACGTTGCGCTATGGAGGGTGTCTGCAGAGGAATACGTGGAGAT
AGGACGCGGCTTGATGTGCAAGCGCGATACCTCCACAGACGTCTCCTTATGCACCTCTA

121 ArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysPro
AAGGCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTTAAATGCCC
TTCCGTCCACCCCCTGAAGGTGATGCACTGCCCATCTGATGACTGTTAGAAATTTACGGG

181 CysGlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPhe
GTGCCAGGTCCCATCGCCGAATTTTTACAGAATTGGACGGGGTGGCCTACATAGGTT
CACGGTCCAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAA

241 AlaProProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGlu
TGCGCCCCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGA
ACGCGGGGGGACGTTGCGGAACGACGCCCTCTCCATAGTAAGTCTCATCTGAGGTGCT

301 TyrProValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSer
ATACCCGGTAGGGTCGCAATTACCTTGCGAGCCCGAACCGGACGTGGCCGTGTTGACGTC
TATGGGCCATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGCACAACTGCAG

361 MetLeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGly
CATGCTCACTGATCCCTCCCATATAACAGCAGAGGCGGCCGGGCGAAGGTTGGCGAGGGG
GTACGAGTGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCGCTTCCAACCGCTCCCC

421 SerProProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAla
ATACCCCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGC
TAGTGGGGGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCAGGTTAGAGAGTTCCG

481 ThrCysThrAlaAsnHisAspSerProAsp
AACTTGACCGCTAACCATGACTCCCCTGAT
TTGAACGTGGCGATTGGTACTGAGGGGACTA



FIG. 19

-----Overlap with 14c-----
1 SerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThrAlaAspHis
AGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGACCCGCTAACCAT
TCGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGTTGAACGTGGCGATTGGTA

61 AspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlu
GACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAGGCAGGAGATGGGCGGC
CTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCCGTCTCTACCCGCCG

121 AsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSerPheAspProLeu
AACATCACCAGGGTTGAGTCAGAAAACAAAGTGTTGATTCTGGACTCCTTCGATCCGCTT
TTGTAGTGTTCCCAACTCAGTCTTTTGTTCACCACTAAGACCTGAGGAAGCTAGGCGAA

181 ValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArgLysSerArg
GTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAAATCCTGCGGAAGTCTCGG
CACCGCCCTCCTGCTCGCCCTCTAGAGGCATGGGCGTCTTAGGACGCCCTCAGAGCC

241 ArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProProLeuValGlu
AGATTCGCCCAGGCCCTGCCGTTTGGGCGCGGCCGACTATAACCCCCCGCTAGTGGAG
TCTAAGCGGGTCCGGGACGGGCAAACCCGCGCCGGCTGATATTGGGGGGCGATCACCTC

301 ThrTrpLysLysProAspTyrGluProProValValHisGlyCysProLeuProProPro
ACGTGGAAAAAGCCCGACTACGAACCACCTGTGGTCCATGGCTGTCCGCTTCCACCTCCA
TGCACCTTTTTTCGGGCTGATGCTTGGTGGACACCAGGTACCGACAGGCGAAGGTGGAGGT

361 LysSerProProValPro
AAGTCCCCTCCTGTGCCG
TTCAGGGGAGGACACGGC

FIG. 20

1 ValTrpAlaArgProAspTyrAsnProProLeuValGluThrTrpLysLysProAspTyr
CGTTTGGGCGCGGCCGACTATAACCCCCCGCTAGTGGAGACGTGGAAAAAACCCGACTA
GCAAAACCCGCGCCGGCTGATATTGGGGGGCGATCACCTCTGCACCTTTTTTGGGCTGAT

-----Overlap with 8f-----
61 GluProProValValHisGlyCysProLeuProProProLysSerProProValProPro
CGAACCCACCTGTGGTCCATGGCTGCCGCTTCCACCTCCAAAGTCCCCTCCTGTGCCTCC
GCTTGGTGGACACCAGGTACCGACGGGCGAAGGTGGAGGTTTCAGGGGAGGACACGGAGG

121 ProArgLysLysArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAlaGlu
GCCTCGGAAGAAGCGGACGGTGGTCTCACTGAATCAACCCTATCTACTGCCTTGGCCGA
CGGAGCCTTCTTCGCCTGCCACCAGGAGTGACTTAGTTGGGATAGATGACGGAACCGGCT

181 LeuAlaThrArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThr
GCTCGCCACCAGAAGCTTTGGCAGCTCCTCAACTTCCGGCATTACGGGCGACAATACGAC
CGAGCGGTGGTCTTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCCGCTGTTATGCTG

241 ThrSerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerPhe
AACATCCTCTGAGCCCGCCCTTCTGGCTGCCCCCGACTCCGACGCTGAGTCTTTTGC
TTGTAGGAGACTCGGGCGGGGAAGACCGACGGGGGGGCTGAGGCTGCGACTCAGGAAACG

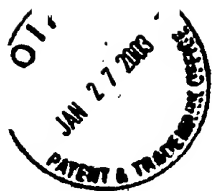


FIG. 21

1 AlaSerArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThrThr
GCCTCCAGAAGCTTTGGCAGCTCCTCAACTTCCGGCATTACGGGCGACAATACGACAACA
CGGAGGTCTTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGT
-----Overlap with 33f-----
61 SerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSer
TCCTCTGAGCCCGCCCTTCTGGCTGCCCCCGACTCCGACGCTGAGTCCTATTCTCTCC
AGGAGACTCGGGCGGGGAAGACCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGG
121 MetProProLeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThr
ATGCCCCCCTGGAGGGGGAGCCTGGGGATCCGGATCTTAGCGACGGGTGATGGTCAACG
TACGGGGGGGACCTCCCCCTCGGACCCCTAGGCCTAGAATCGCTGCCAGTACCAAGTTGC
181 ValSerSerGluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThr
GTCAGTAGTGAGGCCAACGCGGAGGATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACA
CAGTCATCACTCCGGTTGCGCTCTACAGCACACGACGAGTTACAGAATGAGAACCTGT
241 GlyAlaLeuValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSer
GGCGCACTCGTCACCCCGTGCGCCGCGGAAGAACAAGAACTGCCATCAATGCACTAAGC
CCGCGTGAGCAGTGGGGCACGCGGCGCCTTCTTGTCTTTGACGGGTAGTTACGTGATTGC
301 AsnSerLeuLeuArgHisHisAsnLeuValTyrSerThrThrSerArgSer
AACTCGTTGCTACGTCAACCAATTTGGTGTATTCCACCACCTCAGCGAGTG
TTGAGCAACGATGCAGTGGTGTAAACCACATAAGGTGGTGGAGTGCGTCAC

FIG. 22

1 GlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArg
GGCACCTATGTTTATAACCATCTGACTCCTCTTCGGGACTGGGCGCACAAAGGCTTGGCA
CCGTGGATACAAATATTGGTAGAGTGAGGAGAAGCCCTGACCCGCGTGTGCGGAACGCT
61 AspLeuAlaValAlaValGluProValValPheSerGlnMetGluThrLysLeuIleThr
GATCTGGCCGTGGCTGTAGAGCCAGTCGTCTTCTCCCAATGGAGACCAAGCTCATCACG
CTAGACCGGCACCGACATCTCGGTCAGCAGAAAGAGGTTTACCTCTGGTTCGAGTAGTGC
121 TrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArg
TGGGGGGGAGATACCGCCGCGTGGGTGACATCATCAACGGCTTGCTGTTTCCGCCCCG
ACCCCCGTCTATGGCGGCGACGCCACTGTAGTAGTTGCCGAACGGACAAAGGCGGGCG

181 ArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeu
AGGGGCCGGGAGATACTGCTCGGGCCAGCCGATGGAATGGTCTCCAAGGGTTGGAGGTTG
TCCCGGCCCTCTATGACGAGCCCGGTGCGCTACCTTACCAGAGGTTCCCAACCTCCAAC
241 LeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThr
CTGGCGCCCATCACGGCGTACGCCCAGCAGACAAGGGGGCCTCCTAGGGTGCATAATCACC
GACCGCGGGTAGTGCCGATGCGGGTCGTCTGTTCCCGGAGGATCCACGTATTAGTGG
-----Overlap with 7e-----
301 SerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIleValSerThrAla
AGCCTAACTGGCCGGGACAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGTCAACTGCT
TCGGATTGACCGGCCCTGTTTTTGGTTACCTCCCACTCCAGGTCTAACACAGTTGACGA

361 AlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrp
GCCCCAACCTTCTGGCAACGTGCATCAATGGGGTGTGCTGG
CGGGTTTGAAGGACCGTTGCACGTAGTTACCCACACGACC



FIG. 23

1 GlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLysArgTyr
GGCGGTGTTGTTCTCGTTCGGGTTGATGGCGCTGACTCTGTCACCATATTACAAGCGCTAT
CCGCCACAACAAGAGCAGCCCAACTACCGCGACTGAGACAGTGGTATAATGTTTCGCGATA

61 IleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHis
ATCAGCTGGTGCTTGTGGTGCTTCAGTATTTTCTGACCAGAGTGAAGCGCAACTGCAC
TAGTCGACCACGAACACCACCGAAGTCATAAAAGACTGGTCTCACCTTCGCGTTGACGTG

121 ValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeuMetCys
GTGTGGATTCCCCCCTCAACGTCCGAGGGGGGCGGACGCCGTCATCTTACTCATGTGT
CACACCTAAGGGGGGAGTTGCAGGCTCCCCCGCGCTGCGGCAGTAGAATGAGTACACA

181 AlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAlaValPheGlyPro
GCTGTACACCCGACTCTGGTATTTGACATCACCAAATTGCTGCTGGCGCTCTTCGGACCC
CGACATGTGGGCTGAGACCATAAACTGTAGTGGTTTAAACGACGACCGGCAGAAGCCTGGG

241 LeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGlnGlyLeu
CTTTGGATTCTTCAAGCCAGTTTGCTTAAAGTACCCTACTTTGTGCGCGTCCAAGGCCTT
GAAACCTAAGAAGTTCGGTCAAACGAATTTTCATGGGATGAAACACGCGCAGGTTCCGGAA

301 LeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMetValIle
CTCCGGTTCTGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGTGCAAATGGTCATC
GAGGCCAAGACGCGCAATCGCGCCTTCTACTAGCCTCCGGTAATGCACGTTTACCAGTAG

361 IleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeuArgAsp
ATTAAGTTAGGGGCGCTTACTGGCACCTATGTTTATAACCATCTCACTCCTCTTCGGGAC
TAATTCAATCCCCGGAATGACCGTGATACAAATATTGGTAGAGTGAGGAGAAGCCCTG

-----Overlap with 7f -----

421 TrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPheSerGln
TGGGCGCACACGGCTTGCGAGATCTGGCCGTGGCTGTAGAGCCAGTCGTCTTCTCCCAA
ACCCGCGTGTGCGGAACGCTCTAGACCGGCACCGACATCTCGGTACGAGAAGAGGGTT

481 MetGluThrLysLeuIleThrTrpGly
ATGGAGACCAAGCTCATCAGTGGGGGGG
TACCTCTGGTTTCGAGTAGTCACCCCCCG



FIG. 24

1 GluTyrValValLeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrp
GGGAGTACGTCGTTCTCCTGTTCTTCTGCTTGCAGACGCGCGCTGCTCCTGCTTGT
CCCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCGCGCAGACGAGGACGAACA

61 MetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAla
GGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGAACCCTCGTAATACTTAATG
CCTACTACGATGAGTATAGGGTTCGCCTCCGCCGAAACCTCTTGAGCATTATGAATTAC

121 AlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrp
CAGCATCCCTGGCCGGGACGCACGGTCTTGATCCTTCTCGTGTCTTCTGCTTTGCA
GTCTAGGGACCGGCCCTGCGTGCCAGAACATAGGAAGGAGCACAAGAAGACGAAACGTA

181 TyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeu
GGTATTTGAAGGGTAAGTGGGTGCCCCGAGCGGTCTACACCTTCTACGGGATGTGGCCTC
CCATAAACTTCCCATTCACCCACGGGCCTCGCCAGATGTGGAAGATGCCCTACACGGGAG

241 LeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAla
TCCTCCTGCTCCTGTTGGCGTTGCCCCAGCGGGCGTACGCGCTGGACACGGAGGTGGCCG
AGGAGGACGAGGACAACCGCAACGGGGTTCGCCGATGCGCGACCTGTGCCTCCACGGG

-----Overlap with 11b-----

301 SerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLys
CGTCGTGTGGCGGTGTTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTACCATATTACA
GCAGCACACCGCCACAACAAGAGCAGCCCACTACCGCGACTGAGACAGTGGTATAATGT

361 ArgTyrIleSerTrpCysLeuTrpTrpLeuGln
AGCGCTATATCAGCTGGTGCTTGTGGTGGCTTCAGAA
TCGCGATATAGTCGACCACGAACACCACCGAAGTCTT

FIG. 25

1 ProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSerMetProPro
CCAGCCCCCTTCTGGCTGCCCCCGGACTCCGACGCTGAGTCCTATTCTCCATGCCCCCC
GGTCGGGGAAGACCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGG

61 LeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSer
CTGGAGGGGGAGCCTGGGGATCCGGATCTTAGCGACGGGTCATGGTCAACAGTCAGTAGT
GACCTCCCCCTCGGACCCCTAGGCCTAGAATCGCTGCCAGTACCAGTTGTACGTCATCA

-----Overlap with 33g-----

121 GluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeu
GAGGCCAACGCGGAGGATGTCGTGTGCTGCTCAATGTCCTACTCTTGGACAGGCGCACTC
CTCCGGTTGCGCCTCTACAGCACACGACGAGTTACAGGATGAGAACCTGTCCGCGTGAG

181 ValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeu
GTCACCCCGTGCGCCGCGGAAGAACAAGAACTGCCATCAATGCACTGAGCAACTCGTTG
CAGTGGGGCACGCGCGCCTTCTTGTCTTTGACGGGTAGTTACGTGACTCGTTGAGCAAC

241 LeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLys
CTACGTCACCACAATTTGGTGTATTCCACCACCTCACGCACTGCTTGCCAAAGGCAGAAAG
GATGCAGTGGTGTAAACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGCTTTC

301 LysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGly
AAAGTCACATTTGACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAG
TTTCAGTGTAACCTGTCTGACGTTCAAGACCTGTCGGTAATGGTCTGCATGAGTTCTTC

361 ValLysAlaAlaAlaSerLysValLysAlaAsnPhe
GTTAAAGCAGCGGCGTCAAAAGTGAAGGCTAACTTC
CAATTTCTGTCGCCGAGTTTTCACTTCCGATTGAAG



FIG. 26A

1 GluTyrValValLeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrp
GGGAGTACGTCGTTCTCCTGTTCTTCTGCTTGCAGACGCGCGCTGCTCCTGCTTGT
CCCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCGCGCAGACGAGGACGAACA

61 MetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAla
GGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGAACCTCGTAATACTTAATG
CCTACTACGATGAGTATAGGGTTCGCCTCCGCCGAAACCTCTTGGAGCATTATGAATTAC

121 AlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrp
CAGCATCCCTGGCCGGGACGCACGGTCTTGATCCTTCCTCGTGTCTTCTGCTTTGCA
GTCGTAGGGACCGGCCCTGCGTGCCAGAACATAGGAAGGAGCACAAGAAGACGAAACGTA

181 TyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeu
GGTATTTGAAGGGTAAGTGGGTGCCCGGAGCGGTCTACACCTTCTACGGGATGTGGCCTC
CCATAAATCTCCATTACCCACGGGCCTCGCCAGATGTGGAAGATGCCCTACACCGGAG

241 LeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAla
TCCTCCTGCTCCTGTTGGCGTTGCCCGAGCGGCGTACGCGCTGGACACGGAGGTGGCCG
AGGAGGACGAGGACAACCGCAACGGGGTCCGCCGATGCGCGACCTGTGCCTCCACCGGC

301 SerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLys
CGTCGTGTGGCGGTGTTGTTCTCGTCGGGTGATGGCGCTGACTCTGTACCATATTACA
GCAGCACACCGCCACAACAAGAGCAGCCCACTACCGCGACTGAGACAAGTGGTATAATGT

361 ArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGln
AGCGCTATATCAGCTGGTGTGTTGGTGGCTTCAGTATTTTCTGACCAGAGTGAAGCGC
TCGCGATATAGTCGACCACGAACACCACCGAAGTCATAAAGACTGGTCTACCTTCGCG

421 LeuHisValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeu
AACTGCACGTGTGGATTCCCCCTCAACGTCCGAGGGGGGCGGACGCGCTCATCTTAC
TTGACGTGCACACTAAGGGGGGAGTTGCAGGCTCCCCCGCGCTGCGGCAAGTAGAATG

481 MetCysAlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAlaValPhe
TCATGTGTGCTGTACACCCGACTCTGGTATTTGACATCACCAAATTGCTGCTGGCCGTCT
AGTACACACGACATGTGGGCTGAGACCATAAAGTGTAGTGGTTAACGACGACCGGCAGA

541 GlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGln
TCGGACCCCTTTGGATTCTCAAGCCAGTTTGCTTAAAGTACCCTACTTTGTGCGCGTCC
AGCCTGGGGAAACCTAAGAAGTTCGGTCAAACGAATTTATGGAATGAAACACGCGCAGG

601 GlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMet
AAGGCTTCTCCGTTCTGCGGTTAGCGCGGAGATGATCGGAGGCCATTACGTGCAAA
TTCCGGAAGAGGCCAAGACGCGCAATCGCGCTTCTACTAGCCTCCGGTAATGCACGTTT

661 ValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeu
TGGTCATCATTAAGTTAGGGGCGCTTACTGGCACCTATGTTTATAACCATCTCACTCCTC
ACCAAGTAGTAATTCAATCCCCGCAATGACCGTGGATACAAATATTGGTAGAGTGAGGAG

721 ArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPhe
TTCGGGACTGGGCGCACAAACGGCTTGCGAGATCTGGCGTGCGCTGTAGAGCCAGTCGTCT
AAGCCCTGACCGCGGTGTTGCCGAACGCTTAGACC66CACCAGACATCTCGGTACAGAGA

781 SerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGlyAspIle
TCTCCCAAATGGAGACCAAGCTCATCAGTGGGGGGCAGATACCGCCGCTGCGGTGACA
AGAGGGTTTACCTCTGTTGAGTAGTGACACCCCGCTCTATGGCGGCGCACGCCACTGT

841 IleAsnGlyLeuProValSerAlaArgArgGlyArgGluIleLeuLeuGlyProAlaAsp
TCATCAACGGCTTGCTGTTTCCGCCGAGGGGAGATACTGCTCGGGCCAGCCG
AGTAGTTGCCGAACGGACAAGGCGGGGCTCCCGGCCCTCTATGACGAGCCGGTGGC

901 GlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThr
ATGGAATGGTCTCCAGGGGGTGGAGGTTGCTGGCGCCCATCAGGCGTACGCCAGACCG
TACCTTACCAGAGGTTCCCACTCCAACGACCGCGGAGTAGTGGCGCATGCGGGTGTCT



FIG. 26B

Arg61yLeuLeuGlyCysIlelleThrSerLeuThrGlyArgAspLysAsnGlnValGlu
961 CAAGGGGCTCCTAGGGTGCATAATCACCAGCCTAACTGGCCGGGACAAAACCAAGTGG
GTTCCCGGAGGATCCCACGTATTAGTGGTCGGATTGACCGGCCCTGTTTTGGTTCAAC

GlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGly
1021 AGGGTGAGGTCCAGATTGTGTCAACTGCTGCCAAACCTTCTGGCAACGTGCATCAATG
TCCCACTCCAGGTCTAACACAGTTGACGACGGGTTTGGAAAGGACCGTTGCACGTAGTTAC

ValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyPro
1081 GGGTGTGCTGGACTGTCTACCACGGGGCCGGAACGAGGACCATCGCGTACCCAAGGGTC
CCACACGACCTGACAGATGGTGCCCCGGCCTTGCTCTGGTAGCGCAGTGGGTTCCACG

ValIleGlnMetTyrThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGly
1141 CTGTTCATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCCGCAAG
GACAGTAGGTCTACATATGGTTACATCTGGTTCTGGAACACCCGACCGGGGCGAGGCGTTC

SerArgSerLeuThrProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHis
1201 GTAGCCGCTCATTGACACCTGCACCTTGCGGCTCTCGGACCTTACCTGGTCACGAGGC
CATCGCGAGTAACCTGTGGGACGTGAACGCGGAGGAGCTGGAATGGACAGTGTCTCG

AlaAspValIleProValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArg
1261 ACGCCGATGTCAATCCCGTGCAGCGGGCGGGGTGATAGCAGGGGCGAGCTGTGTGCCCC
TGCGGCTACAGTAAGGGCACGCGGCCGCCCACTATCGTCCCCGTCGGACGACAGCGGGG

ProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAla
1321 GGCCCATTTCTACTTGAAAGGCTCCTCGGGGGTCCGCTGTTGTGCCCCGCGGGGACG
CCGGGTAAAGGATGAACTTTCCGAGGAGCCCCCAGGCGACAACACGGGGCGCCCCGTGC

ValGlyIlePheArgAlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIle
1381 CCGTGGGCATATTTAGGGCCGCGGTGTGCACCCGTGGAGTGGCTAAGGCGGTGGACTTTA
GGCACCCTATAAATCCCGGCGCCACACGTGGGCACCTCACCATTCCGCCACCTGAAAT

ProValGluAsnLeuGluThrThrMetArgSerProValPheThrAspAsnSerSerPro
1441 TCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTCCTCTC
AGGGACACCTCTTGGATCTCTGTTGGTACTCCAGGGGCCACAAGTGCTATTGAGGAGAG

ProValValProGlnSerPheGlnValAlaHisLeuHisAlaProThrGlySerGlyLys
1501 CACCAGTAGTCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCACAGGCGAGGGCA
GTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTGCCGT

SerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsnPro
1561 AAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTCAACC
TTCTGTGGTTCCAGGGCCGACGTATACGTCGAGTCCCGATATTCCACGATCATGAGTTGG

SerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAspPro
1621 CCTCTGTTGCTGCAACACTGGGCTTGGTGCTTACATGTCCAAGGCTCATGGGATCGATC
GGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTAGCTAG

AsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSerThrTyr
1681 CTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCAGTACTCCACCT
GATTGTAGTCTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGCATGAGGTGGA

GlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleCysAsp
1741 ACGGCAAGTTCCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGACATAATAATTTGTG
TGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGGAATACTGTATTATTAACAC

GluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGlnAla
1801 ACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATCGGCCTGTCTTGACCAAG
TGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAGCCGTGACAGGAACCTGGTTC

GluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySerValThr
1861 CAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCTCCGGGCTCCGTC
GTCTCTGACGCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCGAGGCACT

ValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPheTyr
1921 CTGTGCCCCATCCCAACATCGAGGAGGTTGCTGTGTCACCACCGGAGAGATCCCTTTTT
GACACGGGGTAGGGTTGTAGTCTCTCAACGAGACAGGTGGTGGCTCTCTAGGGAAAAA



FIG. 26C

GlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHisSer
1981 ACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTTCTGTCTATT
TGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCTCTGTAGAGTAGAAGACAGTAA

LysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAla
2041 CAAAGAAGAAGTGCACGAACTCGCCGCAAAGCTGGTCGCATTGGGCATCAATGCCGTGG
GTTTCTTCTTCACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCGTAGTTACGGCACC

TyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValValAla
2101 CCTACTACCGCGGTCTTGACGTGTCCGTCATCCGACCAGCGGGCGATGTTGTCGTCTGTGG
GGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCTACAAACAGCAGCACC

ThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThr
2161 CAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGCAATA
GTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTAT

CysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThrIleThr
2221 CGTGTGTACCCAGACAGTCTGATTTCAGCCTTGACCTACCTTCACCATTTGAGACAATCA
GCACACAGTGGGTCTGTGAGCTAAAGTCGGAAGTGGGATGGAAGTGGTAACTCTGTTAGT

LeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysPro
2281 CGCTCCCCCAGGATGCTGTCTCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGGAAGC
GCGAGGGGGTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCTGACCGTCCCCCTTCG

GlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSerSerVal
2341 CAGGCATCTACAGATTTGTGGCACCAGGGGAGCGCCCTCCGGCATGTTGCACTCGTCCG
GTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTGAGCAGGC

LeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThrThr
2401 TCCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCCGCCGAGACTA
AGGAGACACTCACGATACTGCGTCCGACACGAACATACTCGAGTGCGGGCGGCTCTGAT

ValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeuGlu
2461 CAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCATCTTG
GTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACGGTCTGGTAGAAC

PheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGlnThr
2521 AATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCACTTTCTATCCGAGA
TTAAACCCCTCCCGCAGAAATGTCCGAGTGAGTATATCTACGGGTGAAAGATAGGGTCT

LysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAlaArg
2581 CAAAGCAGAGTGGGGAGAACCCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTGCGCTA
GTTTCGTCTACCCCTCTTGGAGGAATGGACCATCGCATGGTTTCGGTGGCACACGCGAT

AlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeuLysPro
2641 GGGCTCAAGCCCTCCCCATCGTGGGACCAGATGTGGAAGTGTGTTGATTGCGCTCAAGC
CCCGAGTTCGGGGAGGGGTAGCACCCTGGTCTACACCTTCAAACTAAGCGGAGTTCCG

ThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGluIleThr
2701 CCACCCTCCATGGGCCAACACCCTGCTATACAGACTGGGCGCTGTTTCAAGATGAAATCA
GGTGGGAGGTACCCGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACTTTAGT

LeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluValVal
2761 CCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTCGGCCGACCTGGAGGTCG
GGGACTGCGTGGGTGAGTGGTTTATGTAGTACTGTACGTACAGCCGGCTGGACCTCCAGC

ThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeuSer
2821 TCACGAGCAGCTGGGTGCTCGTTGGCGGCGTCTGGCTGCTTTGGCCGCGTATTGCTGT
AGTGTCTGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACCGGCGCATACGGACA

ThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIlePro
2881 CAACAGGCTGCGTGGTCAATAGTGGGCAGGGTCGTCTTGTCCGGGAAGCCGGCAATCATAC
GTTGTCCGACGCACAGTATCACCCGTCCAGCAGAACAGGCCCTTCGGCCGTTAGTATG



FIG. 26D

TyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeu
3001 CGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTCC
GCATGTAGCTCGTTCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAGG

GlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLys
3061 TGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAGACCAACTGGCAAA
ACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGACGACAGGTCTGGTTGACCGTTT

LeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAla
3121 AACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATACTTGG
TTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCCTATGTTATGAACC

GlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAla
3181 CGGGCTTGTCAACGCTGCCTGGTAACCCGCCATTGCTTCATTGATGGCTTTTACAGCTG
GCCCGAACAGTTGCGACGGACCATTTGGGGCGGTAACGAAGTAACACCAGAAATGTCGAC

ValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrpVal
3241 CTGTCAACAGCCCACTAACCCTAGCCAAACCTCCTCTTCAACATATTGGGGGGGTGGG
GACAGTGGTGGGTGATTGGTGATCGGTTTGGGAGGAGAAAGTTGTATAACCCCCCACC

AlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAlaGly
3301 TGGCTGCCCAGCTCGCCGCCCGGGTGGCGCTACTGCTTTGTGGGGCTGGCTTAGCTG
ACCGACGGGTGAGCGGGCGGGGGCCACGGCGATGACGGAACACCCGCGACCGAATCGAC

AlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyrGly
3361 GCGCCGCCATCGGCAGTGTGGACTGGGGAAGGTCTCATAGACATCCTTGAGGGGTATG
CGCGGGCGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCCATACT

AlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSerThr
3421 GCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCTCCA
GCGCCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGGAGGT

GluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGlyVal
3481 CGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGTCGGCG
GCCTCCTGGACAGTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGGAGCATCAGCCGC

ValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrpMet
3541 TGGTCTGTGCAGCAATACTGCGCCGGCAGCTTGGCCCGGGCGAGGGGGCAGTGCACTGGA
ACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCCGTCCCCCGTCACGTCACT

AsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrValPro
3601 TGAACCGGCTGATAGCCTTCGCTCCCGGGGGAACCATGTTTCCCCACGCACTACGTGC
ACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCGTGATGCACG

GluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGlnLeu
3661 CGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAACCCAGC
GCCTCTCGCTACGTGACGGGGCAGTGACGGTATGAGTCGTGGAGTGACATTGGGTGCG

LeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySerTrp
3721 TCCTGAGGCGACTGCACCAAGTGGATAAGCTCGGAGTGTAACCTCCATGCTCCGGTTCCT
AGGACTCCGCTGACGTGGTCACTATTGAGCCTCACATGGTGAGGTACGAGGCCAAGGA

LeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeuLys
3781 GGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGGCTAA
CCGATTCCCTGTAGACCTGACCTATACGCTCCACAACCTCGCTGAAATTCTGGACCGATT

AlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyrLys
3841 AAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCTTTGTGCTCTGCCAGCGCGGGTATA
TTCGATTGAGTACGGTGTGACGGACCTAGGGGAAACACAGGACGGTTCGCGCCCATAT

GlyValTrpArgValAspGlyIleMetHisThrArgCysHisCysGlyAlaGluIleThr
3901 AGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATCA
TCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACTCTAGT



FIG. 26E

SerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAlaPro
4021 GGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCTGTACCCCCCTTCTGCGC
CCTCACCCTGGAAGGGGTAATTACG6ATGTGGTGCCG6GGGACATGGGGGGAAGGACGCG

AsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGlnVal
4081 CGAACTACACGTTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAGGACGG
GCTTGATGTGCAAGCGCGATACCTCCCACAGACGTCTCCTTATACACCTCTATTCCGTCC

GlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGlnVal
4141 TGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCGTGGCAGG
ACCCCTGAAGGTGATGCACTGCCCATACTGATGACTGTTAGAGTTTACGGGCACGGTCC

ProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaProPro
4201 TCCCATCGCCCGAATTTTTACAGAATTGGACGGGGTGGCCTACATAGGTTTGGCAGG
AGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCAAACGCGGGG

CysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyrProVal
4261 CCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGAATACCCGG
GGACGTTGCGGAACGACGCCCTCTCCATAGTAAGTCTCATCTGAGGTGCTTATGGGCC

GlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMetLeuThr
4321 TAGGGTCGCAATTACCTTGCAGCCGACCGGAGCTGGCCGTGTTGACGTCCATGCTCA
ATCCAGCGTTAATGGAACGCTCGGGCTTGGCTGCACCGGCACAACTGCAGGTACGAGT

AspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerProPro
4381 CTGATCCCTCCCATATAACAGCAGAGGGCGGCGGCGAAGGTTGGCGAGGGGATCAGCCC
GACTAGGGAGGGTATATTGTCGTCTCCGCCGCGCCGCTTCCAACCGCTCCCTAGTGGGG

SerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThr
4441 CCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGA
GGAGACACCGGTCGAGGAGCCGATCGGTGATAGGCGAGGTAGAGAGTTCCGTTGAACGT

AlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGlnGlu
4501 CCGCTAACCATGACTCCCTGATGCTGAGCTCATAGAGGCAACCTCCTATGGAGGACGG
GGCGATTGTAAGTGGGGGACTACGACTCGAGTATCTCCGTTGGAGGATACCTCCGTCC

MetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSerPhe
4561 AGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGACTCCT
TCTACCGCGGTTGTAGTGGTCCCACTAGTCTTTTGTTCACCACTAAGACCTGAGGA

AspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArg
4621 TCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGAGAAATCCTGC
AGCTAGGCGAACACCGCCTCCTCTGCTCGCCCTCTAGAGGATGGGCGTCTTTAGGACG

LysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProPro
4681 GGAAGTCTCGGAGATTGCGCCAGGCCCTGCCGTTTGGGCGCGGCGGACTATAACCCCC
CCTTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAACCGCGCGGCGCTGATATTGGGGG

LeuValGluThrTrpLysLysProAspTyrGluProProValValHisGlyCysProLeu
4741 CGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCACTGTGGTCCATGGCTGTCCGC
GCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGACACCAAGGTACCGACAGGCG

ProProProLysSerProProValProProProArgLysLysArgThrValValLeuThr
4801 TTCCACCTCAAAGTCCCCTCCTGTGCTCCGCTCGGAAGAAGCGGAGGTTGGTCTCA
AAGGTGGAGGTTTCAAGGGAGGACAGGAGGCGGAGCCTTCTTCGCTGCCACCAAGGAGT

GluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSerSer
4861 CTGAATCAACCCTATCTACTGCTTGGCGAGCTCGCCACCAAGCTTTGGCAGCTCCT
GACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCGTCGAGGA

ThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGluProAlaProSerGlyCys
4921 CAACCTCCGGCATTACGGGCGACAATACGACAACATCTCTGAGCCCGCCCCCTTCTGGCT
GTTGAAGGCCGTAATGCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGAAGACCGA

ProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGluProGly
4981 GCCCCCGGACTCCGACGCTGAGTCCTATTCTCCATGCCCCCCTGGAGGGGGAGCCTG
CGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCCCTCGGAC



FIG. 26F

AspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGluAsp
5041 GGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGCGGAGG
CCCTAGGCCTAGAATCGCTGCCAGTACCAAGTTGCCAGTCATCACTCCGGTTGCGCCTCC

ValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAlaAla
5101 ATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCACTCGTCACCCCGTGCGCCG
TACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGACGCGGC

GluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHisAsnLeu
5161 CGGAAGAACAGAACTGCCATCAATGCCTAAGCAACTCGTTGCTACGTCACCACTT
GCCTTCTTGCTTTGACGGGTAGTTACGTGATTCTGTTGAGCAACGATGCAGTGGTGTAA

ValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAspArg
5221 TGGTGTATTCCACCACCTCACGAGTGCTTGCCAAAGGCGAAGAAAGTCACATTTGACA
ACCACATAAGGTGGTGGAGTGCCTCACGAACGGTTTCCGTCTTCTTTCAGTGTAAGTGT

LeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAlaAlaSer
5281 GACTGCAAGTTCTGGACAGCCATTACAGGACGTAAGGAGGTTAAAGCAGCGGGCT
CTGACGTTCAAGACCTGTCGGTAATGGTCTGTCATGAATTCTCCAATTCGTCGCCGCA

LysValLysAlaAsnLeu
5341 CAAAAGTGAAAGGCTAAGTTG
GTTTTCACTTCCGATTGAAC

FIG. 30

1 GlyGlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCys
GGGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGCAAGCGGCGTACTGACAAGTCTGT
CCCCCCTCTTGACGCCGATAGCGTCCACGGCGCGTTCGCCGCATGACTGTTGATCGACA

61 GlyAsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGln
GGTAACACCCTCACTTGTACATCAAGGCCGAGCAGCCTGTCGAGCCGAGGGCTCCAG
CCATTGTGGGAGTGAACAATGTAGTTCGGGGCTCGTCGGACAGCTCGGCGTCCCGAGGT

-----Overlap with 19g-----
121 AspCysThrMetLeuValCysGlyAspLeuValValIleCysGluSerAlaGlyVal
GACTGCACCATGCTCGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGTC
CTGACGTGGTACGAGCACACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCAG

181 GlnGluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaPro
CAGGAGGACGCGGCGAGCCTGAGAGCCTTACGGAGGCTATGACCAGGTACTCCGCCCCC
GTCTCTCTGCGCGCTCGGACTCTCGGAAGTGCTCCGATACTGGTCCATGAGGCGGGG

241 ProGlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsn
CCTGGGGACCCCAACACAGAAATACGACTTGGAGCTCATAACATCATGCTCTCCAAC
GGACCCCTGGGGGGTGTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTG

301 ValSerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThr
GTGTCACTGCCACGACGGCGCTGGAAGAGGGTCTACTACCTACCCGTGACCCTACA
CACAGTCAGCGGGTGTGCGCGACCTTCTCCAGATGATGGAGTGGGCACTGGGATGT

361 ThrProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeu
ACCCCTCTCGGAGAGCTGCGTGGGAGACAGCAAGACACTCCAGTCAATTCCTGGCTA
TGGGGGAGCGCTCTCGACGCACCTCTGTCGTTCTGTGTGAGGTCAGTTAAGGACCGAT

421 GlyAsnIleIleMetPheAlaProThrLeuTrpAla
GGCAACATAATCATGTTTGGCCCCACACTGTGGGCG
CCGTTGTATTAGTACAAACGGGGGTGTGACACCCGC



FIG. 27

IlePheLysIleArgMetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsn
1 CCATATTTAAATCAGGATGTACGTGGAGGGTCCGAACACAGGCTGGAAGCTGCCCTGCA
GGTATAAATTTAGTCCATGACACCTCCAGCTTGTGTCCGACCTTCGACGGACGT

TrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeu
61 ACTGGACGGGGCGAACGTTGCGATCTGGAAGACAGGACAGGTCGAGCTCAGCCCCGT
TGACCTGGCCCCCGCTTGCAACGCTAGACCTTCTGTCCCTGTCCAGGCTCGAGTCGGGCA

LeuLeuThrThrThrGlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeu
121 TACTGCTGACCACTACACAGTGGCAGGTCTCCCGTGTCTTCACAAACCTACAGCCT
ATGACGACTGGTGATGTTCACCGTCCAGGAGGGCACAAAGGAAGTGTGGGATGGTCCGA

SerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyVal
181 TGTCCACCGGCTCATCCACCTCCACAGAACATTTGTGGACGTGCAGTACTGTACGGGG
ACAGGTGGCCGGAGTAGGTGGAGGTGGTCTTGTAAACACCTGCACGTCAATGAACATGCCCC

GlySerSerIleAlaSerTrpAlaIleLysTrpGluTyrValValLeuPheLeuLeu
241 TGGGGTCAAGCATCGCGTCTGGGCCATTAAAGTGGAGTACGTCTCTCTCTCTCTTC
ACCCAGTTCGTAGCGCAGGACCCGGTAATTACACCTCATGCAGCAAGAGGACAAAGGAAG

LeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGlu
301 TGCTTGCAAGACGGCGCTCTCTCTCTCTGTGGATGATGCTACTCATATCCCAAGCGG
ACGAACGTCTGCGCGGCAGACGAGGACGAAACACCTACTACGATGATAGGGTTCCGCC

-----Overlap with 14i-----
AlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeu
361 AGCGGGCTTTGGAGAACCTCGTAATACTTAATGCAGCATCCCTGGCCGGGACGACGGTC
TCCGCCGAAACCTCTTGGAGCATTATGAATTACGTCTGTAGGACCGGCCCTCGGTGCCAG

Val
421 TTGTATC
AACATAG



FIG. 28

-----Overlap with 39c-----
LeuLysGluValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerValGluGlu
1 TGCTCAAGGAGGTTAAAGCAGCGGCGTCAAAGTGAAGGCTAACTTGCTATCCGTAGAGG
ACGAGTTCCTCCAATTTCTGTCGCCGAGTTTTCACTTCCGATTGAACGATAGGCATCTCC

AlaCysSerLeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAlaLysAsp
61 AAGCTTGACGCTGACGCCCCACACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAG
TTCGAACGTCGGACTGCGGGGGTGTGAGTCGGTTTAGGTTCAAACCAATACCCCGTTTTTC

ValArgCysHisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAspLeuLeu
121 ACGTCCGTTGCCATGCCAGAAAGGCCGTAAACCCACATCAACTCCGTGTGGAAAGACCTTC
TGCAGGCAACGGTACGGTCTTTCCGGCATTGGGTGTAGTTGAGGCACACCTTTCTGGAAG

GluAspAsnValThrProIleAspThrThrIleMetAlaLysAsnGluValPheCysVal
181 TGGAAGACAATGTAACACCAATAGACACTACCATCATGGCTAAGAACGAGGTTTTCTGCG
ACCTTCTGTTACATTGTGGTTATCTGTGATGGTAGTACCGATTCTTGCTCCAAAAGACGC

GlnProGluLysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeuGlyVal
241 TTCAGCCTGAGAAGGGGGTCCGTAAGCCAGCTCGTCTCATCGTGTCCCGATCTGGGCG
AAGTCGGACTCTTCCCCCAGCATTCGGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGC

ArgValCysGluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAlaValMet
301 TGCGCGTGTGCGAAAAGATGGCTTTGTACGACGTGGTTACAAAGCTCCCTTGGCCGTGA
ACGCGCACACGCTTTTCTACCGAAACATGCTGCACCAATGTTTCGAGGGGAACCGGCACT

GlySerSerTyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuValGlnAla
361 TGGGAAGCTCCTACGGATTCCAATACTCACCAGGACAGCGGGTTGAATTCCTCGTGCAAG
ACCCTTCGAGGATGCCTAAGGTTATGAGTGGTCTGTCGCCCACTTAAGGAGCACGTTT

TrpLysSerLysLysThrProMetGlyPheSerTyrAspThrArgCysPheAspSerThr
421 CGTGGAAGTCCAAGAAAACCCCAATGGGGTTCTCGTATGATACCCGCTGCTTTGACTCCA
GCACCTTCAGGTTCTTTGGGGTTACCCCAAGAGCATACTATGGGCGACGAACTGAGGT

ValThrGluSerAspIleArgThrGluGluAla
481 CAGTCACTGAGAGCGACATCCGTACGGAGGAGGCA
GTCAGTGAATCTCGCTGTAGGCATGCCTCCTCCGT



FIG. 29

1 GluPheLeuValGlnAlaTrpLysSerLysLysThrProMetGlyPheSerTyrAspThr
GAATTCCTCGTGCAAGCGTGGAAGTCCAAGAAAACCCCAATGGGGTTCTCGTATGATACC
CTTAAGGAGCACGTTTCGCACCTTCAGGTTCTTTTGGGGTTACCCCAAGAGCATACTATGC
-----Overlap with 35f-----
61 ArgCysPheAspSerThrValThrGluSerAspIleArgThrGluGluAlaIleTyrGln
CGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCGTACGGAGGAGGCAATCTACCAA
GCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGCCTCCTCCGTTAGATGGTT
121 CysCysAspLeuAspProGlnAlaArgValAlaIleLysSerLeuThrGluArgLeuTyr
TGTTGTGACCTCGACCCCCAAGCCCGCGTGCCCATCAAGTCCCTCACCGAGAGGCTTTAT
ACAACACTGGAGCTGGGGGTTCTGGGCGCACCGGTAGTTCAGGGAGTGCTCTCCGAAATA
181 ValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArgAla
GTTGGGGGCCCTCTTACCAATTCAAGGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGCG
CAACCCCCGGGAGAAATGGTTAAGTTCCCCCTCTTGACGCCGATAGCGTCCACGGCGCGC
241 SerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArgAla
AGCGGCGTACTGACAACTAGCTGTGGTAACACCCTCACTTGCTACATCAAGGCCCCGGCA
TCGCCGATGACTGTTGATCGACACCATGTGTGGGAGTGAACGATGTAGTTCCGGGGCCCGT
301 AlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeuVal
GCCTGTCGAGCCGCAGGGCTCCAGGACTGCACCATGCTCGTGTGTGGCGACGACTTAGTC
CGGACAGCTCGGCGTCCCGAGGTCTTGACGTGGTACGAGCACACACCGCTGCTGAATCAG
361 ValIleCysGluSerAlaGlyValGlnGluAspAlaAla
GTTATCTGTGAAAGCGCGGGGTCCAGGAGGACGCGGCGAG
CAATAGACACTTTCGCGCCCCCAGGTCCTCCTGCGCGCTC



FIG. 31

GlyAlaGlyLysArgValTyrThrLeuThrArgAspProThrThrProLeuAlaArgAla
1 CGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCCTACAAACCCCTCGCGAGAGC
GCCGCGACCTTCTCCAGATGATGGAGTGGGCACTGGGATGTTGGGGGAGCGCTCTCG

-----Overlap with 26g-----
AlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMetPhe
61 TCGGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCATGTT
ACGCACCCCTCTGTCTCTGTGTGAGGTCAGTTAAGGACCGATCCGTTGTATTAGTACAA

AlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAla
121 TGCCCCCACACTGTGGCGAGGATGATGATGATGACCCATTCTTTAGCGTCTTATAGC
ACGGGGGTGTGACACCCGCTCCTACTATGACTACTGGGTAAGAAATCGCAGGAATATCG

ArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIleGlu
181 CAGGGACCCAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCTGTACTCCATAGA
GTCCCCTGGTCGAACTTGTCCGGGAGCTAACGCTCTAGATGCCCCCGACGATGAGGTATCT

ProLeuAspLeuProIleIleGlnArgLeu
241 ACCACTTGATCTACCTCCAATCATTCAAAGACTC
TGGTGAACTAGATGGAGGTTAGTAAGTTTCTGAG



FIG. 32A

IlePheLysIleArgMetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsn
1 CCATATTTAAATCAGGATGTACGTGGGAGGGGTCGAACACAGGCTGGAAGCTGCCTGCA
GGTATAAATTTTAGTCCTACATGCACCCTCCCAGCTTGTGTCCGACCTTCGACGGACGT
TrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeu
61 ACTGGACGCGGGGCGAACGTTGCGATCTGGAAGACAGGGACAGGTCCGAGCTCAGCCCGT
TGACCTGCGCCCCGCTTGCAACGCTAGACCTTCTGTCCCTGTCCAGGCTCGAGTCGGGCA
LeuLeuThrThrThrGlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeu
121 TACTGCTGACCACTACACAGTGGCAGGTCTCCCGTGTTCCTTCACAACCTACCAGCCT
ATGACGACTGGTGATGTGTACCCTCCAGGAGGGCACAAGGAAGTGTGGGATGGTCGGA
SerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyVal
181 TGTCCACCGGCTCATCCACCTCCACCAGAACATTGTGGACGTGCAGTACTTGTACGGGG
ACAGGTGGCCGGAGTAGGTGGAGGTGGTCTTGTAAACCTGCACGTCATGAACATGCCCC
GlySerSerIleAlaSerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeu
241 TGGGGTCAAGCATCGCGTCCTGGGCCATTAAAGTGGGAGTACGTCGTTCTCTGTTCTTCTC
ACCCAGTTCGTAGCGCAGGACCCGGTAATTCACCCTCATGCAGCAAGAGGACAAGGAAG
LeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGlu
301 TGCTTGACAGCGCGCGCTGCTCCTGCTTGTGGATGATGCTACTCATATCCCAAGCGG
ACGAACGTCTGCGCGCGCAGACGAGGACGAACACCTACTACGATGAGTATAGGGTTCCGC
AlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeu
361 AGGCGGCTTTGGAGAACCTCGTAATACTTAATGCAGCATCCCTGGCCGGGACGCACGGTC
TCCGCCGAAACCTCTTGAGCATTATGAATTACGTCGTAGGGACCGGCCCTGCGTGCCAG
ValSerPheLeuValPhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGly
421 TTGTATCCTTCCTCGTGTCTTCTGCTTTGCATGGTATTTGAAGGGTAAGTGGGTGCCCCG
AACATAGGAAGGAGCACAAGAAGACGAAACGTACCATAAACTTCCCATTACCCACGGGG
AlaValTyrThrPheTyrGlyMetTrpProLeuLeuLeuLeuLeuAlaLeuProGln
481 GAGCGGTCTACACCTTCTACGGGATGTGGCCTCTCCTCTGCTCTGTTGGCGTTGCCCC
CTCGCCAGATGTGGAAGATGCCCTACACCGGAGAGGAGGACGAGGACAACCGCAACGGGG
ArgAlaTyrAlaLeuAspThrGluValAlaAlaSerCysGlyGlyValValLeuValGly
541 AGCGGGCGTACGCGCTGGACACGGAGGTGGCCGCGTCGTGTGGCGGTGTTGTTCTCGTCG
TCGCCCCGATGCGCGACCTGTGCCTCCACCGGCGCAGCACACCGCCACAACAAGAGCAGC
LeuMetAlaLeuThrLeuSerProTyrTyrLysArgTyrIleSerTrpCysLeuTrpTrp
601 GGTGATGGCGCTGACTCTGTACCATATTACAAGCGCTATATCAGCTGGTGTGTTGTGGT
CCAACTACCGCGACTGAGACAGTGGTATAATGTTCCGATATAGTCGACCACGAACACCA
LeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsn
661 GGCTTCAGTATTTTCTGACCAGAGTGGAGCGCAACTGCACGTGTGGATTCCCCCCTCA
CCGAAGTCATAAAAGACTGGTCTCACCTTCGCGTTGACGTGCACACCTAAGGGGGGGAGT
ValArgGlyGlyArgAspAlaValIleLeuLeuMetCysAlaValHisProThrLeuVal
721 ACGTCCGAGGGGGGCGCGACGCCGTCATCTTACTCATGTGTGCTGTACACCCGACTCTGG
TGCAGGCTCCCCCGCGCTGCGGCAGTAGAATGAGTACACACGACATGTGGGCTGAGACC
PheAspIleThrLysLeuLeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAlaSer
781 TATTTGACATCACCAAATTGCTGCTGGCCGCTTTCGGACCCCTTTGGATTCTTCAAGCCA
ATAAACTGTAGTGGTTTAAACGACGACCGGCAGAAGCCTGGGGAAACCTAAGAAGTTCGGT
LeuLeuLysValProTyrPheValArgValGlnGlyLeuLeuArgPheCysAlaLeuAla
841 GTTTGCTTAAAGTACCCTACTTTGTGCGCGTCCAAGGCCCTTCTCCGGTTCTGCGCGTTAG
CAAACGAATTTTCATGGGATGAAACACGCGCAGGTTCCGGAAGAGGCCAAGACGCGCAATC



FIG. 32B

ArgLysMetIleGlyGlyHisTyrValGlnMetValIleIleLysLeuGlyAlaLeuThr
901 CGCGGAAGATGATCGGAGGCCATTACGTGCAAATGGTCATCATTAAGTTAGGGGCGCTTA
GCGCCTTCTACTAGCCTCCGGTAATGCACGTTTACCAGTAGTAATTCAATCCCCGCGAAT

GlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArg
961 CTGGCACCTATGTTTATAACCATCTCACTCCTCTTCGGGACTGGGCGCACACGGCTTGC
GACCGTGGATACAAATATTGGTAGAGTGAGGAGAAGCCCTGACCCGCGTGTTCGCGAACG

AspLeuAlaValAlaValGluProValValPheSerGlnMetGluThrLysLeuIleThr
1021 GAGATCTGGCCGTGGCTGTAGAGCCAGTCGCTCTCTCCCAAATGGAGACCAAGCTCATCA
CTCTAGACCGGCACCGACATCTCGGTCAGCAGAAGAGGGTTTACCTCTGGTTCGAGTAGT

TrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArg
1081 CGTGGGGGGCAGATACCGCCGCGTGGGTCACATCATCAACGGCTTGCCTGTTTCCGCCC
GCACCCCCGTCTATGGCGGCGCACGCCACTGTAGTAGTTGCCGAACGGACAAAGGCGGG

ArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeu
1141 GCAGGGGCGGGAGATACTGCTCGGGCCAGCCGATGGAATGGTCTCCAAGGGGTGGAGGT
CGTCCCCGGCCCTCTATGACGAGCCCGGTCGGCTACCTTACCAGAGGTTCCCCACCTCCA

LeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThr
1201 TGCTGGCGCCCATCACGGCGTACGCCAGCAGACAAGGGGCTCCTAGGGTGCATAATCA
ACGACCGCGGGTAGTGCCGCATGCGGGTCGTCTGTTCCCCGGAGGATCCCACGTATTAGT

SerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIleValSerThrAla
1261 CCAGCCTAACTGGCCGGGACAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGTCAACTG
GGTCGGATTGACCGGCCCTGTTTTTGGTTACCTCCCACTCCAGGTCTAACACAGTTGAC

AlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThrValTyrHisGlyAla
1321 CTGCCCCAACCTTCTGGCAACGTGCATCAATGGGGTGTGCTGGACTGTCTACCACGGGG
GACGGGTTTGAAGGACCGTTGCACGTAGTTACCCACACGACCTGACAGATGGTGCCCC

GlyThrArgThrIleAlaSerProLysGlyProValIleGlnMetTyrThrAsnValAsp
1381 CCGGAACGAGGACCATCGCGTCACCCAAGGGTCCTGTTCATCCAGATGTATACCAATGTAG
GGCCTTGCTCCTGGTAGCGCAGTGGGTTCCAGGACAGTAGGTCTACATATGGTTACATC

GlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeuThrProCyrThrCys
1441 ACCAAGACCTTGTGGGCTGGCCCGCTCCGCAAGGTAGCCGCTCATTGACACCCTGCACTT
TGGTTCTGGAACACCCGACCGGGCGAGGCGTTCCATCGGCGAGTAAGTGTGGGACGTGAA

GlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIleProValArgArgArg
1501 GCGGCTCCTCGGACCTTTACCTGGTCACGAGGCACGCCGATGTCATTCCCGTGCGCCGGC
CGCCGAGGAGCCTGGAAATGGACCAAGTGTCCGTGCGGCTACAGTAAGGGCACGCGGGCCG

GlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyrLeuLysGlySerSer
1561 GGGGTGATAGCAGGGGCGAGCCTGCTGTGCCCCGGGCCATTTCTACTTGAAAGGCTCCT
CCCCACTATCGTCCCCGTGGACGACAGCTGGGCCGGGTAAAGGATGAAGTTTCCGAGGA

GlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePheArgAlaAlaValCys
1621 CGGGGGGTCCGCTGTTGTGCCCCGCGGGGCACGCCGTGGGCATATTTAGGGCCGCGGTGT
GCCCCCAGGCGACAACACGGGGCGCCCCGTGCGGCACCCGTATAAATCCCGGCGCCACA

ThrArgGlyValAlaLysAlaValAspPheIleProValGluAsnLeuGluThrThrMet
1681 GCACCCGTGGAGTGGCTAAGGCGGTGGACTTTATCCCTGTGGAGAACCTAGAGACAACCA
CGTGGGCACCTCACCGATTCCGCCACCTGAAATAGGGACACCTCTTGGATCTCTGTTGGT



FIG. 32C

ArgSerProValPheThrAspAsnSerSerProProValValProGlnSerPheGlnVal
1741 TGAGGTCCCCGGTGTTCACGGATAACTCCTCTCCACCAGTAGTGCCCCAGAGCTTCCAGG
ACTCCAGGGGCCACAAAGTGCCATTGAGGAGAGGTGGTCATCACGGGGTCTCGAAGGTCC

AlaHisLeuHisAlaProThrGlySerGlyLysSerThrLysValProAlaAlaTyrAla
1801 TGGCTCACCTCCATGCTCCACAGGCAGCGCAAAAGCACCAAGGTCCGGGTGCATATG
ACCGAGTGGAGGTACGAGGGTGTCCGTGCCGTTTTCTGTTCCAGGGCCGACGTATAC

AlaGlnGlyTyrLysValLeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGly
1861 CAGCTCAGGGCTATAAGGTGCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTTG
GTCGAGTCCCGATATTCCACGATCATGAGTTGGGGAGACAACGACGTTGTGACCCGAAAC

AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
1921 GTGCTTACATGTCCAAGGCTCATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAA
CACGAATGTACAGGTTCCGAGTACCCTAGCTAGGATTGTAGTCTGCCCCACTCTTGT

ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
1981 TTACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTTCCTTGCCGACGGCGGGT
AATGGTGACCGTCGGGGTAGTGATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCCA

SerGlyGlyAlaTyrAspIleIleIleCysAspGluCysHisSerThrAspAlaThrSer
2041 GCTCGGGGGCGCTTATGACATAATAATTTGTGACGAGTGCCACTCCACGGATGCCACAT
CGAGCCCCCGCGAATACTGTATTATTAACACTGCTACGGTGAGGTGCTACGGTGTA

IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
2101 CCATCTTGGGCATCGGCACTGTCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTG
GGTAGAACCCGTAGCCGTGACAGGAAGTGGTTCGTCTGACGCCCCGCTCTGACCAAC

LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluGluVal
2161 TGCTCGCCACCGCCACCCCTCCGGGCTCCGTCACGTGTGCCCCATCCCAACATCAGGAGG
ACGAGCGGTGGCGGTGGGGAGGCCCGAGGCAGTGACACGGGGTAGGGTTGTAGTCTCTC

AlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIle
2221 TTGCTCTGTCCACCACCGGAGAGATCCCTTTTACGGCAAGGTATCCCCCTCGAAGTAA
AACGAGACAGGTGGTGCCCTCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATT

LysGlyGlyArgHisLeuIlePheCysHisSerLysLysLysCysAspGluLeuAlaAla
2281 TCAAGGGGGGGAGACATCTCATCTTCTGTCATTCAAAGAAGAAGTGCGACGAAGTCCGG
AGTTCCCCCCTCTGTAGAGTAGAAGACAGTAAGTTTCTTCTTACGCTGCTTGAGCGGC

LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
2341 CAAAGCTGGTCGATTGGGCATCAATGCCGTGGCCTACTACCGCGGTCTTGACGTGTCCG
GTTTCGACCAGCGTAACCCGTAGTTACGGCACCGGATGATGGCGCCAGAAGTGCACAGGC

IleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThrGlyTyrThr
2401 TCATCCCGACCAAGCGCGATGTTGTGTCGTGGCAACCGATGCCCTCATGACCGGTATA
AGTAGGGCTGGTCGCCGCTACAACAGCAGCACCCTGGCTACGGGAGTACTGCCCCGATAT

GlyAspPheAspSerValIleAspCysAsnThrCysValThrGlnThrValAspPheSer
2461 CCGGCGACTTCGACTCGGTGATAGACTGCAATACGTGTGTACCCAGACAGTCGATTTCA
GGCCGCTGAAGCTGAGCCACTATCTGACGTTATGCACACAGTGGGTCTGTACGCTAAAGT

LeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThr
2521 GCCTTGACCCTACCTTACCATTGAGACAATCACGCTCCCCAGGATGCTGTCTCCGCA
CGGAAGTGGGATGGAAGTGGTAAGTCTGTTAGTGCAGGGGGTCTACGACAGAGGGCGT

GlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGly
2581 CTCAACGTGCGGGCAGGACTGGCAGGGGGAAGCCAGGCATCTACAGATTTGTGGCACCGG
GAGTTGACGCCCGTCTGACCGTCCCCCTTCGGTCCGTAGATGTCTAAACACCGTGGCC

GluArgProSerGlyMetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCys
2641 GGGAGCGCCCTCCGGCATGTTGCACTCGTCCGTCTCTGTGAGTGCTATGACGAGGGT
CCCTCGGGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGA

AlaTrpTyrGluLeuThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThr
2701 GTGCTTGGTATGAGCTCACGCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACA
CACGAACCATACTCGAGTGCGGGCGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGT



FIG. 32D

ProGlyLeuProValCysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeu
2761 CCCCAGGGCTTCCCGTGTGCCAGGACCATCTTGAATTTTGGGAGGGCGTCTTTACAGGCC
GGGGCCCCGAAGGGCACACGGTCTG6TAGAACTTAAACCCTCCCGCAGAAATGTCCGG

ThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyr
2821 TCACTCATATAGATGCCACTTTCTATCCAGACAAAGCAGAGTGGGGAGAACCTTCTCT
AGTGAGTATATCTACGGGTGAAAGATAGGGTCTGTTTCTGCTCACCCCTCTTGAAGGAA

LeuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAsp
2881 ACCTGGTAGCGTACCAAGCCACCGTGTGCGCTAGGGCTCAAGCCCTCCCCATCGTGGG
TGGACCATCGCATGGTTCGGTGGCACACGGATCCCGAGTTCCGGGAGGGGGTAGCACCC

GlnMetTrpLysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeu
2941 ACCAGATGTGGAAGTGTGTTGATTGCGCTCAAGCCACCTCCATGGGCCAACACCCCTGC
TGGTCTACACCTTCAAACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGGACG

TyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIle
3001 TATACAGACTGGGCGCTGTTCAAGATGAAATCACCTGACGCACCCAGTACCAAATACA
ATATGTCTGACCCGCGACAAGTCTTACTTTAGTGGGACTGCGTGGGTCAGTGGTTTATGT

MetThrCysMetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGly
3061 TCATGACATGCATGTGCGGCCACCTGGAGGTGCTCACGAGCACCTGGGTGCTCGTTGGCG
AGTACTGTACGTACAGCCGGCTGGACCTCCAGCAGTGTCTGTTGGACCCACGAGCAACCGC

ValLeuAlaAlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArg
3121 GCGTCTGGCTGCTTTGGCCGCGTATTGCTGTCAACAGGCTGCGTGGTCATAGTGGGCA
CGCAGGACCGACGAAACCGGCGCATAACGGACAGTTGTCCGACGCACCAATATCACCCGT

ValValLeuSerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPhe
3181 GGGTCGTCTTGTCCGGGAAGCCGGCAATCATACCTGACAGGGAGTCTCTACCGAGAGT
CCCAGCAGAACAGGCCCTTCCGCGTTAGTATGGACTGTCCCTTACGGAGATGGCTCTCA

AspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAla
3241 TCGATGAGATGGAAGAGTGTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCG
AGCTACTCTACCTTCTCAGGAGAGTGTGAATGGCATGTAGCTCGTTCCTACTACGAGC

GluGlnPheLysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluVal
3301 CCGAGCAGTTCAAGCAGAAAGCCCTCGGCTCTGACAGACCGCTCCCGTACGGCAGAGG
GGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCC

IleAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMet
3361 TTATCGCCCTGCTGTCCAGACCAACTGGCAAACTCGAGACCTTCTGGGCGAAGCATA
AATAGCGGGGACGACAGGTCTGGTTGACCGTTTTTGAGCTCTGGAAGACCCGCTTCGTAT

TrpAsnPheIleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnPro
3421 TGTGGAACCTTCATCAGTGGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACC
ACACCTTGAAGTAGTCACCTATGTTATGAACCGCCGACAGTTGCGACGGACCATTTGG

AlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
3481 CCGCCATTGCTTCATTGATGGCTTTTACAGCTGCTGTCACAGCCCACTAACCACTAGCC
GGCGGTAACGAAGTAACACCGAAAATGTCGACGACAGTGGTGGGTGATTGGTGATCGG

ThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAla
3541 AAACCTCCTCTTCAACATATTGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCCCGGTG
TTTGGGAGGAGAAGTTGTATAACCCCCCACCACCGACGGGTGAGCGGGGGGGGCCAC

AlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGly
3601 CCGCTACTGCTTTGTGGGCGCTGGCTTAGCTGGCGCCGCCATCGGCAGTGTGGACTGG
GGCGATGACGGAAACACCCGCGACCGAATCGACCGCGGGGTAGCCGTACAACTGACC

LysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAla
3661 GGAAGGTCTCATAGACATCCTTGCAGGGTATGGCGGGGGTGGCGGGAGCTCTTGTGG
CCTTCCAGGAGTATCTGTAGGAACGTCCCATACCGCGCCGACCGCCCTCGAGAACC

PheLysIleMetSerGlyGluValProSerThrGluAspLeuValAsnLeuLeuProAla
3721 CATTCAAGATCATGAGCGGTGAGGTCCCTCCACGAGGACCTGGTCAATCTACTGCCCG
GTAAGTTCTAGTACTCGCCACTCCAGGGGAGGTGCTCTGGACCAAGTTAGATGACGGGG



FIG. 32E

IleLeuSerProGlyAlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHis
3781 CCATCCTCTCGCCCGAGCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGC
GGTAGGAGAGCGGGCCTCGGGAGCATCA6CCGCACAGACACGTCTTATGACGCGGCCG

ValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArg
3841 ACGTTGGCCCGGGCGAGGGGCGAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCCTCCC
TGCAACCGGGCCGCTCCCCGTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGG

GlyAsnHisValSerProThrHisTyrValProGluSerAspAlaAlaAlaArgValThr
3901 GGGGGAACCATGTTTCCCCACGCACTACGTGCCGGAGAGCGATGCAGCTGCCCGCTCA
CCCCCTGGTACAAAGGGGGTGCCTGATGCACGGCCTCTCGCTACGTGCAGGGGCGAGT

AlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSer
3961 CTGCCATACTCAGCAGCCTCACTGTAACCCAGCTCCTGAGGCGACTGCACAGTGGATAA
GACGGTATGAGTCGTGCGAGTGACATTGGGTGAGGACTCCGCTGACGTGGTCACCTATT

SerGluCysThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCys
4021 GCTCGGAGTGTACCACTCCATGCTCCGGTTCTGGCTAAGGGACATCTGGGACTGGATAT
CGAGCCTCACATGGTGAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCTGACCTATA

GluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGly
4081 GCGAGGTGTTGAGCGACTTTAAGACCTGGCTAAAAGCTAAGCTCATGCCACAGCTGCCTG
CGTCCACAACCTCGTGAAATTCTGGACCGATTTTCGATTGAGTACGGTGTGACGGAC

IleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMet
4141 GGATCCCTTTGTGTCTGCAAGCGCGGGTATAAGGGGGTCTGGCGAGTGGACGGCATCA
CCTAGGGGAAACACAGGACGGTGCGCCCATATTCCCCAGACCGCTCACCTGCCGTAGT

HisThrArgCysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArg
4201 TGCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGA
ACGTGTGAGCGACGGTGACACCTCGACTCTAGTGACCTGTACAGTTTGGCCCTGCTACT

IleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyr
4261 GGATCGTCGGTCTAGGACCTGCAGGAACATGTGGAGTGGGACCTTCCCCATTAATGCCT
CCTAGCAGCCAGGATCCTGGACGTCTTGTACACCTACCCCTGGAAGGGGTAATTACGGA

ThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgVal
4321 ACACCACGGGCCCCTGTACCCCCCTTCTGCGCCGAACACACGTTGCGCTATGGAGGG
TGTGGTGCCCGGGGACATGGGGGGAAGGACGCGGCTTGTGTGCAAGCGCGATACCTCC

SerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMet
4381 TGTCTGCAGAGGAATATGTGGAGATAAGGCAAGGTGGGGGACTTCCACTACGTGACGGGTA
ACAGACGTCTCCTTATACACCTCTATTCCGTCCACCCCTGAAGGTGATGCACTGCCCAT

ThrThrAspAsnLeuLysCysProCysGlnValProSerProGluPhePheThrGluLeu
4441 TGACTACTGACAATCTCAAATGCCCGTGCAGGTCCCATCGCCGAAATTTTACAGAAT
ACTGATGACTGTTAGAGTTTACGGGCACGGTCCAGGGTAGCGGGCTTAAAGGTGCTTAT

AspGlyValArgLeuHisArgPheAlaProProCysLysProLeuLeuArgGluGluVal
4501 TGGACGGGGTGCGCCATACATAGGTTTGC6CCCCCTGCAAGCCCTTGTGCGGGAGGAGG
ACCTGCCCCACGCGGATGTATCCAACGCGGGGGGACGTTGCGGAACGACGCCCTCTCC

SerPheArgValGlyLeuHisGluTyrProValGlySerGlnLeuProCysGluProGlu
4561 TATCATTAGAGTAGGACTCCACGAATACCCGGTAGGGTCGCAATTACCTTGCAGGCCG
ATAGTAAGTCTCATCCTGAGGTGCTTATGGGCCATCCAGCGTTAATGGAACGCTCGGGC

ProAspValAlaValLeuThrSerMetLeuThrAspProSerHisIleThrAlaGluAla
4621 AACCGGACGTGGCCGTGTTGACGTCCATGCTCACTGATCCCTCCCATATAACAGCAGAGG
TTGGCTGCACCGGCACAACTGCAGGTACGAGTGACTAGGGAGGGTATATTGTCTGCTCC

AlaGlyArgArgLeuAlaArgGlySerProProSerValAlaSerSerSerAlaSerGln
4681 CGGCCGGGCGAAGGTTGGCGAGGGGATACCCCCCTCTGTGGCCAGCTCCTCGGCTAGCC
GCCGGCCGCTTCCAACCGCTCCCTAGTGGGGGAGACACCGGTCGAGGAGCCGATCGG

LeuSerAlaProSerLeuLysAlaThrCysThrAlaAsnHisAspSerProAspAlaGlu
4741 AGCTATCCGCTCCATCTCTCAAGGCACTTGACCGCTAACCATGACTCCCTGATGCTG
TCGATAGGCGAGGTAGAGAGTTCCGTTGAACGTGGCGATTGGTACTGAGGGGACTACGAC



FIG. 32F

LeuIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlyAsnIleThrArgValGlu
4801 AGCTCATAGAGGCCAACCTCCTATGGAGGCAGGAGATGGGCGGCAACATCACCAGGGTTG
TCGAGTATCTCCGTTGGAGGATACCTCCGTCTCTACCGCCGTTGTAGTGGTCCCAAC

SerGluAsnLysValValIleLeuAspSerPheAspProLeuValAlaGluGluAspGlu
4861 AGTCAGAAAACAAAGTGGTATTCTGGACTCCTTCGATCCGCTTGTGGCGGAGGAGACG
TCAGTCTTTTGTTCACCACTAAGACCTGAGGAAGCTAGGCGAACACCGCCTCCTCCTGC

ArgGluIleSerValProAlaGluIleLeuArgLysSerArgArgPheAlaGlnAlaLeu
4921 AGCGGGAGATCTCCGTACCGCAGAAATCCTGCGGAAGTCTCGGAGATTCGCCAGGCC
TCGCCCTCTAGAGGCATGGGCGTCTTTAGGACGCCTTCAGAGCCTCTAAGCGGGTCCGGG

ProValTrpAlaArgProAspTyrAsnProProLeuValGluThrTrpLysLysProAsp
4981 TGCCCGTTTGGGCGCGGCCGACTATAACCCCCGCTAGTGGAGACGTGGAAAAAGCCG
ACGGGCAAACCGCGCGCCGCTGATATTGGGGGCGATCACCTTGACCTTTTTTCCGGG

TyrGluProProValValHisGlyCysProLeuProProProLysSerProProValPro
5041 ACTACGAACCACTGTGGTCCATGGCTGTCCGCTTCCACCTCCAAAGTCCCTCCTGTGC
TGATGCTTGGTGGACACCAAGTACCGACAGGCGAAGGTGGAGGTTTCAGGGGAGGACACG

ProProArgLysLysArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAla
5101 CTCCGCTCGGAAGAAGCGGACGGTGGTCTCACTGAATCAACCTATCTACTGCCTTGG
GAGGCGGAGCCTTCTTCGCTTGCACCAAGAGTGACTTAGTTGGGATAGATGCGGAACC

GluLeuAlaThrArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThr
5161 CCGAGCTCGCCACCAGAAGCTTTGGCAGCTCCTCACTTCCGGCATTACGGGCGACAATA
GGCTCGAGCGGTGGTCTTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTAT

ThrThrSerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerTyr
5221 CGACAACATCCTCTGAGCCCGCCCTTCTGGCTGCCCGCCGACTCCGACGCTGAGTCCT
GCTGTTGTAGGAGACTCGGGCGGGGAAGACCGACGGGGGGGCTGAGGCTGCGACTCAGGA

SerSerMetProProLeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrp
5281 ATTCTCCATGCCCCCTGGAGGGGGAGCCTGGGGATCCGGATCTTAGCGACGGGTCTAT
TAAGGAGGTACGGGGGGGACCTCCCCCTCGGACCCTAGGCCAGAAATCGTGCCCAAGTA

SerThrValSerSerGluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSer
5341 GGTCAACGGTCAGTAGTGAGGCCAACGCGGAGGATGTCGTGTGCTGCTCAATGTCTTACT
CCAGTTGCCAGTCATCACTCCGGTTGCGCCTCCTACAGCACACGACGAGTTACAGAATGA

TrpThrGlyAlaLeuValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAla
5401 CTTGGACAGGCGCACTCGTCACCCCGTGCGCCGCGGAAGAAGAACTGCCCATCAATG
GAACCTGTCCGCGTGAGCAGTGGGGCACGCGGCGCCTTCTTGTCTTTGACGGGTAGTTAC

LeuSerAsnSerLeuLeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAla
5461 CACTAAGCAACTCGTTGCTACGTACCAACAATTTGGTGTATTCCACCACCTACGCGAGT
GTGATTCTGTTGAGCAACGATGCAGTGGTGTAAACCACATAAGGTGGTGGAGTGCCTCAC

CysGlnArgGlnLysLysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGln
5521 CTTGCCAAAGGCAGAAAGTACATTTGACAGACTGCAAGTTCTGGACAGCCATTACC
GAACGGTTTCCGTCTTCTTCAAGTGTAAACTGTCTGACGTTCAAGACCTGTCCGTAATGG

AspValLeuLysGluValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerVal
5581 AGGACGTACTCAAGGAGGTTAAAGCAGCGGCGTCAAAAGTGAAGGCTAACTTGCTATCCG
TCCTGCATGAGTTCTCCAATTCGTCGCCGAGTTTTCACTTCCGATTGAACGATAGGC

GluGluAlaCysSerLeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAla
5641 TAGAGGAAGCTTGACGCTGACGCCCCACACTCAGCCAAATCCAAGTTTGGTTATGGGG
ATCTCCTTCGAACGTCGGACTGCGGGGGTGTGAGTCGGTTTAGGTTCAAACCAATACCC

LysAspValArgCysHisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAsp
5701 CAAAAGACGTCCGTTGCCATGCCAGAAAGGCCGTAACCCACATCAACTCCGTGTGGAAG
GTTTTCTGCAGGCAACGGTACGGTCTTTCGGCATTGGGTGTAGTTGAGGCACACCTTTC

LeuLeuGluAspAsnValThrProIleAspThrThrIleMetAlaLysAsnGluValPhe
5761 ACCTTCTGGAAGACAATGTAAACCAATAGACACTACCATCATGGCTAAGAACGAGGTTT
TGGAGACCTTCTGTTACATTGTGGTTATCTGTGATGGTAGTACCGATTCTTGCTCCAAA



FIG. 32G

CysValGlnProGluLysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeu
5821 TCTGCGTTTCAGCCTGAGAAAGGGGGGTCGTAAGCCAGCTCGTCTCATCGTGTTCCTCCCGATC
AGACGCAAGTCGGAATCTTCCCCCAGCATTGGTCGAGCAGAGTAGCAAGGGGGCTAG

GlyValArgValCysGluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAla
5881 TGGGCGTGCCTGTGCGAAAAGATGGCTTTGTACGACGTGGTTACAAAGCTCCCTTGG
ACCCGACGCGCACACGCTTTTCTACCGAAACATGCTGCACCAATGTTTCGAGGGGAACC

ValMetGlySerSerTyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuVal
5941 CCGTGATGGGAAGCTCCTACGGATTCCAATACTACCAAGGACAGCGGGTTGAATTCCTCG
GGCACTACCTTCGAGGATGCCTAAGGTTATGAGTGGTCTGTGCCCCAACTTAAGGAGC

GlnAlaTrpLysSerLysLysThrProMetGlyPheSerTyrAspThrArgCysPheAsp
6001 TGCAAGCGTGGAAAGTCCAAGAAAACCCCAATGGGGTTCTCGTATGATACCCGCTGCTTTG
ACGTTGCGACCTTCAGGTTCTTTTGGGGTTACCCCAAGAGCATACTATGGGCGACGAAAC

SerThrValThrGluSerAspIleArgThrGluGluAlaIleTyrGlnCysCysAspLeu
6061 ACTCCACAGTCACTGAGAGCGACATCCGTACGGAGGAGGCAATCTACCAATGTTGTGACC
TGAGGTGTCAGTGACTCTCGCTGTAGGCATGCCTCCTCCGTTAGATGGTTACAACACTGG

AspProGlnAlaArgValAlaIleLysSerLueThrGluArgLeuTyrValGlyGlyPro
6121 TCGACCCCAAGCCCGCTGGCCATCAAGTCCCTCACCGAGAGGCTTTATGTTGGGGGCC
AGCTGGGGGTTGCGGCGCACCGGTAGTTACGGAGTGGCTCTCCGAAATACAACCCCGG

LeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeu
6181 CTCTTACCAATTCAAGGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGCGAGCGGCGTAC
GAGAATGGTTAAGTTCCCCCTCTTGACGCCGATAGCGTCCACGGCGCGCTCGCGCGATG

ThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAla
6241 TGACAACTAGCTGTGGTAACACCCTCACTTGCTACATCAAGGCCCGGGCAGCCTGTGCGAG
ACTGTTGATCGACACCATTTGTGGAGTGAACGATGTAGTTCCGGGCCCGTGGGACAGCTC

AlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeuValValIleCysGlu
6301 CCGCAGGGCTCCAGGACTGCACCATGCTCGTGTGTGGCGACGACTTAGTCGTTATCTGTG
GGCGTCCCGAGGTCCTGACGTGGTACGAGCACACCCGCTGCTGAATCAGCAATAGACAC

SerAlaGlyValGlnGluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArg
6361 AAAGCGCGGGGGTCCAGGAGGACGCGGGCAGCCTGAGAGCCTTCACGGAGGCTATGACCA
TTTCGCGCCCCCAGGTCCTCTGCGCGCTCGGACTCTCGGAAGTGCTCCGATACTGGT

TyrSerAlaProProGlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSer
6421 GGTACTCCGCCCCCTGGGGACCCCCACAACCAAGATACGACTGGAGCTCATAACAT
CCATGAGGCGGGGGGACCCCTGGGGGGTGTGGTCTTATGCTGAACCTCGAGTATTGTA

CysSerSerAsnValSerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThr
6481 CATGCTCCTCCAACGTGTCAGTGCGCCACGACGGCGCTGGAAGAGGGTCTACTACCTCA
GTACGAGGAGGTTGCACAGTCAGCGGGTGTGCCGCGACCTTTCTCCAGATGATGGAAT

ArgAspProThrThrProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProVal
6541 CCCGTGACCTACAACCCCTCGCGAGAGCTGCGTGGGAGACAGCAAGACACACTCCAG
GGCACTGGGATGTTGGGGGGAGCGCTCTCGACGCACCTCTGTGCTGTGTGAGGTC

AsnSerTrpLeuGlyAsnIleIleMetPheAlaProThrLeuTrpAlaArgMetIleLeu
6601 TCAATTCCTGGCTAGGCAACATAATCATGTTTGGCCCCACACTGTGGGCGAGGATGATAC
AGTTAAGGACCGATCCGTTGTATTAGTACAAACGGGGGTGTGACACCCGCTCCTACTATG

MetThrHisPhePheSerValLeuIleAlaArgAspGlnLeuGluGlnAlaLeuAspCys
6661 TGATGACCCATTCTTTAGCGTCTTATAGCCAGGAGACAGCTTGAAACAGGCCCTCGATT
ACTACTGGGTAAAGAAATCGCAGGAATATCGGTCCTGCTGCAACTGTCCGGGAGCTAA

GluIleTyrGlyAlaCysTyrSerIleGluProLeuAspLeuProProIleIleGlnArg
6721 GCGAGATCTACGGGGCCTGCTACTCCATAGAACCCTTGATCTACCTCCAATCATTCAA
CGCTCTAGATGCCCCGACGATGAGGTATCTTGGTGAACCTAGATGGAGGTTAGTAAGTTT

Leu
6781 GACTC
CTGAG



FIG. 33

Lane Number	Chimp Reference Number	Infection Type	Sample date (days) (0=inoculation day)	ALT (alanine) aminotransferase level in sera (μU/ml)
1	1	NANB	0	0
2	1	NANB	76	71
3	1	NANB	118	19
4	1	NANB	154	N/A
5	2	NANB	0	0
6	2	NANB	21	52
7	2	NANB	73	13
8	2	NANB	138	N/A
9	3	NANB	0	8
10	3	NANB	43	205
11	3	NANB	53	14
12	3	NANB	159	6
13	4	NANB	-3	11
14	4	NANB	55	132
15	4	NANB	83	N/A
16	4	NANB	140	N/A
17	5	HAV	0	4
18	5	HAV	25	147
19	5	HAV	40	18
20	5	HAV	268	5
21	6	HAV	-8	N/A
22	6	HAV	15	100
23	6	HAV	41	10
24	6	HAV	129	N/A
26	7	HAV	0	7
27	7	HAV	22	83
28	7	HAV	115	5
29	7	HAV	139	N/A
30	8	HAV	0	15
31	8	HAV	26	130
32	8	HAV	74	8
33	8	HAV	205	5
34	9	HBV	-290	N/A
35	9	HBV	379	9
36	9	HBV	435	6
37	10	HBV	0	8
38	10	HBV	111-118 (pool)	96-156 (pool)
39	10	HBV	205	9
40	10	HBV	240	13
41	11	HBV	0	11
42	11	HBV	28-56 (pool)	8-100 (pool)
43	11	HBV	169	9
44	11	HBV	223	10

FIG. 33A

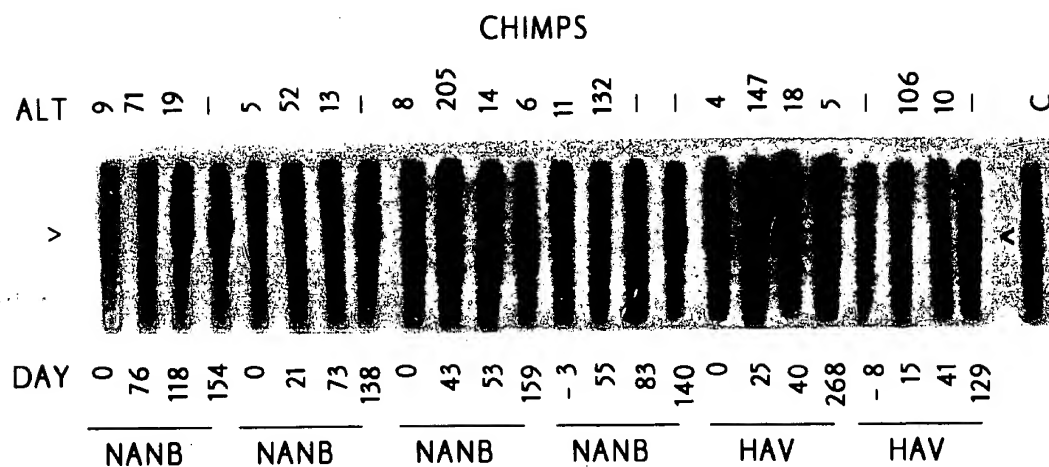


FIG. 33B

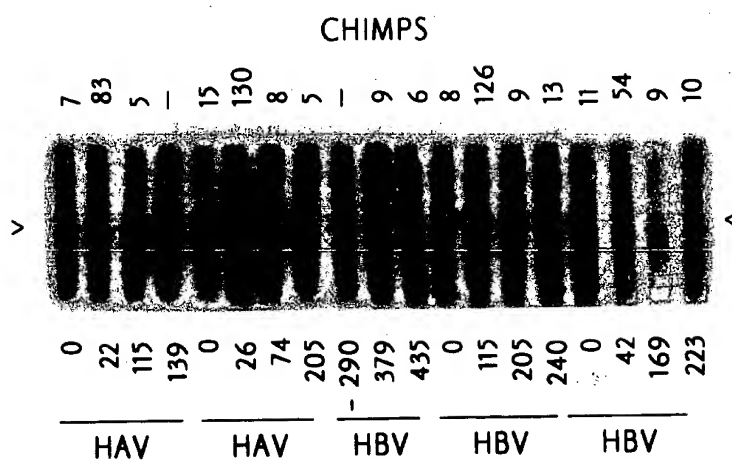




FIG. 34

Lane Number	Patient Reference Number	Diagnosis	ALT Level ($\mu\text{u/ml}$)
1	1 ¹	NANB	1354
2	1 ¹	NANB	31
3	2 ¹	NANB	14
4	2 ¹	NANB	79
5	2 ¹	NANB	26
6	3 ¹	NANB	78
7	3 ¹	NANB	87
8	3 ¹	NANB	25
9	4 ¹	NANB	60
10	4 ¹	NANB	13
11	5 ¹	NANB	298
12	5 ¹	NANB	101
13	6 ¹	NANB	474
14	6 ¹	NANB	318
15	7 ¹	NANB	20
16	7 ¹	NANB	163
17	8 ¹	NANB	44
18	8 ¹	NANB	50
19	9	NANB	N/A
20	10	NANB	N/A
21	11	NANB	N/A
22	12	Normal	N/A
23	13	Normal	N/A
24	14	Normal	N/A
26	30174	Normal	N/A
27	30105	Normal	N/A
28	30072	Normal	N/A
29	30026	Normal	N/A
30	30146	Normal	N/A
31	30250	Normal	N/A
32	30071	Normal	N/A
33	15	AcuteHAV	N/A
34	16	AcuteHAV	N/A
35	17	AcuteHAV	N/A
36	18	AcuteHAV	N/A
37	48088	AcuteHAV	N/A
38	47288	AcuteHAV	N/A
39	47050	AcuteHAV	N/A
40	46997	AcuteHAV	N/A
41	19	Convalescent HBV	N/A
42	20	(anti-HBSag+ve;	N/A
43	21	anti-HBCag+ve)	N/A
44	22	(anti-HBSag+ve;	N/A
45	23	anti-HBCag+ve)	N/A
46	24	(anti-HBSag+ve;	N/A
47	25	anti-HBCag+ve)	N/A
48	26	(anti-HBSag+ve;	N/A
49	27	anti-HBSag+ve)	N/A

¹Sequential serum samples were assayed from these patients

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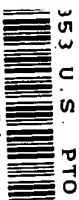


FIG. 34A

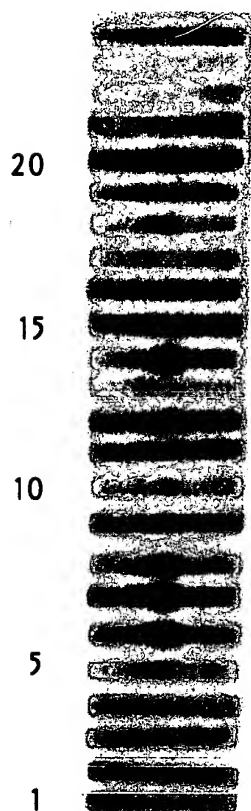


FIG. 34B

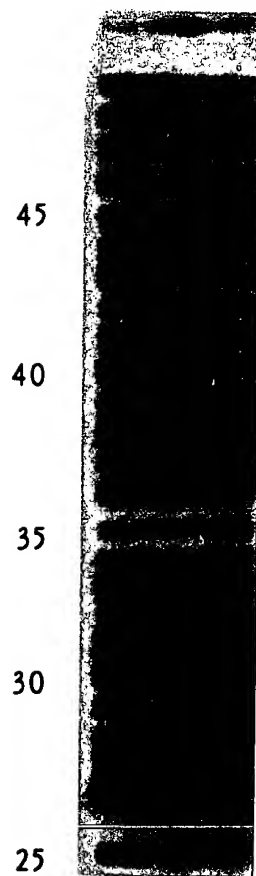




FIG. 35

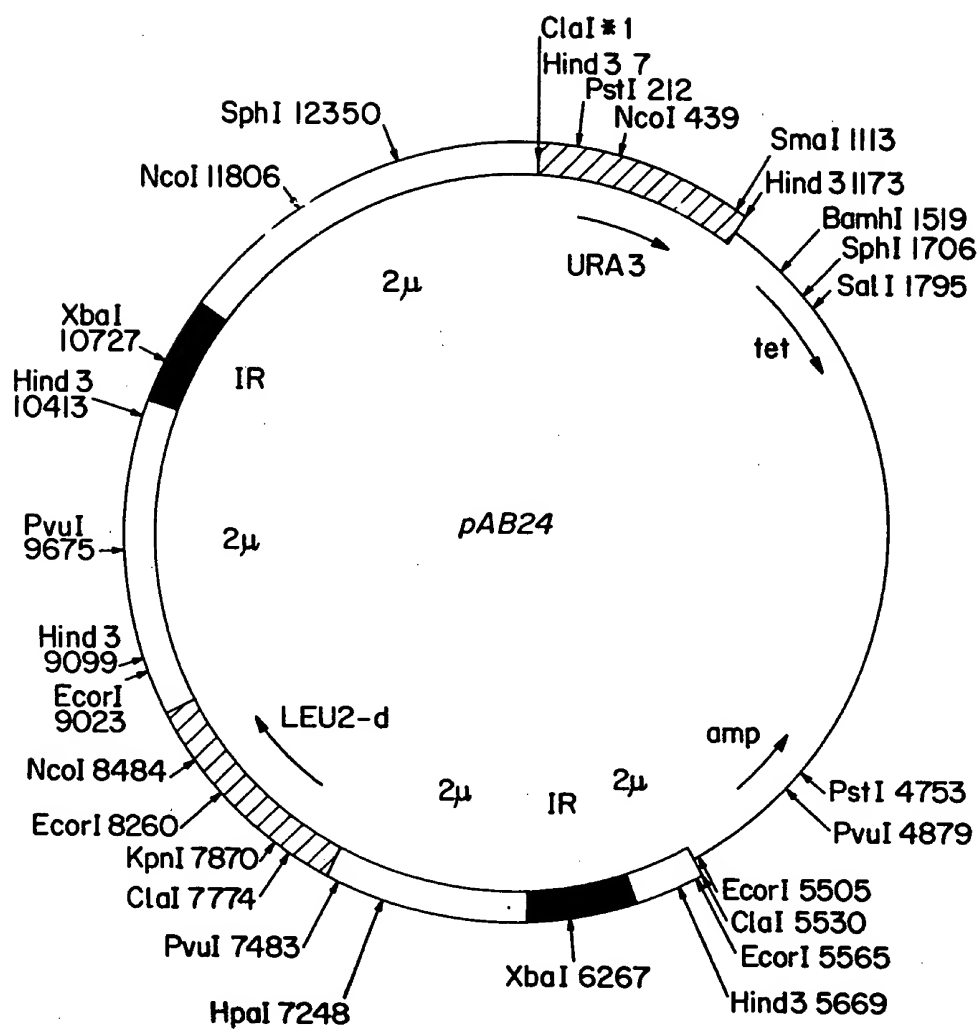


FIG. 36A

[illegible]

841 AlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGly
GCTGGCGCCGCCATCGGCAGTGTGGACTGGGGAAAGGTCCTCATAGACATCCTTGCAAGGG
CGACC GCGGCGGTAGCCGT CACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCC

901 TyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValPro
TATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCC
ATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGG

961 SerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValVal
TCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGTC
AGGTGCCTCCTGGACCA GTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGGAGCATCAG

1021 GlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGln
GGCGTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGGCA GTGCAG
CCGCACCAAGACACGTGTTATGACGCGGCCGTGCAACCGGGCCCGCTCCCCCGTCACGTC

<<<<<<<<<<<<<<<<<<<<<<<<<NANBH][---extra

1081 TrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProValHisHis
TGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCCAGTCCATCAT
ACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGTCAGGTAGTA

-----]
LysArgOP

1141 AAGCGTTGACGCTCCCTACGGGTGGACTGTGGAGAGACAGGGCACTGCTAAGGCCCAAAT
TTCGCAACTGCGAGGGATGCCACCTGACACCTCTCTGTCCCGTGACGATTCCGGGTTTA

1201 CTCAGCCATGCATCGAGGGGTACAATCCGTATGGCCAACA ACTAGCGGTACGTAAAGTC
GAGTCGGTACGTAGCTCCCCATGTTAGGCATACCGGTTGTTGATCGCGCATGCATTTTCAAG

1261 TCCTTTCTCGATGGTCCATACCTTAGATGCGTTAGCATTAATCCGAATTC
AGGAAAGAGCTACCAGGTATGGAATCTACGCAATCGTAATTAGGCTTAAG

FIG. 37A



FIG. 37B



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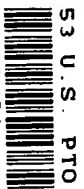


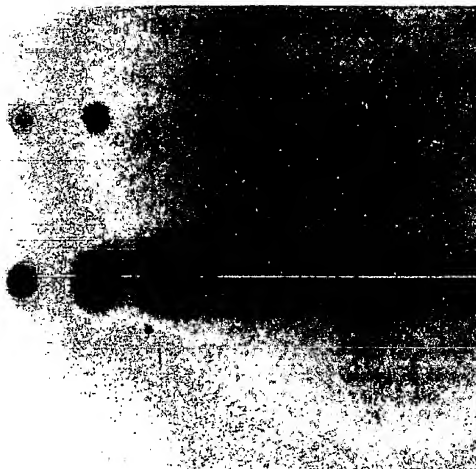
FIG. 38

1 2 3 4



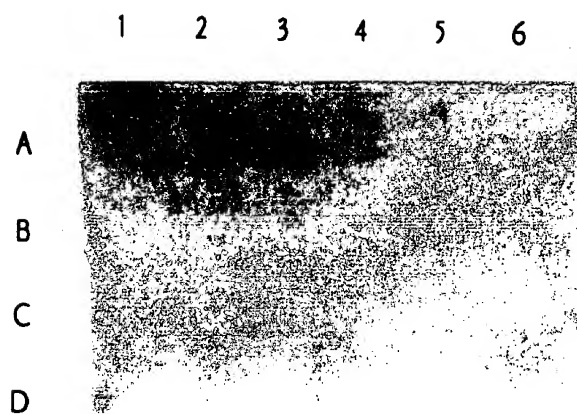
FIG. 40

1 2 3 4



3 U.S. PTO
1/27/03

FIG. 39



01/27/03
C853 U.S. PTO

FIG. 41A

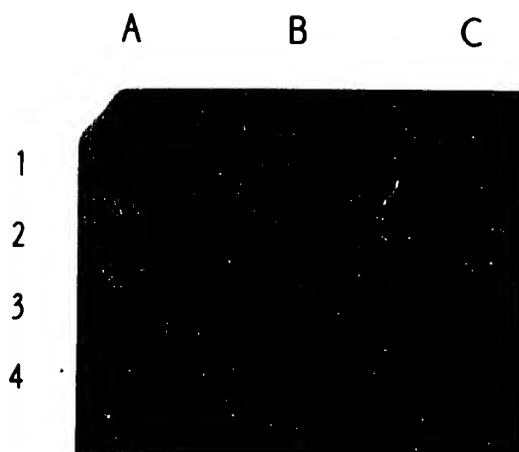
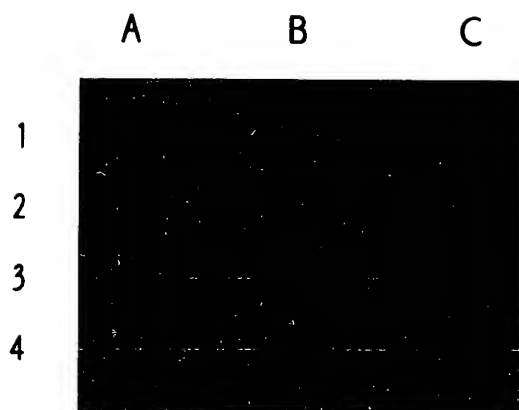


FIG. 41B



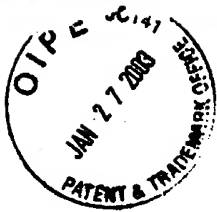


FIG. 42A

HCV	10	20	30	40	50
	EYVLLFLL	LADARVCS	LWMMLLS	QAEAALEN	VILNAA
MNWVD1	AVSFVTLIT	GNMSFRDL	GRVMVM	GATMTDDI	GMGVTYL
	130	140	150	160	170
HCV	60	70	80	90	100
	WYLGK	KWVPGAV	TYFGMW	PLLLLLL	ALPQRAY
MNWVD1	TSKEL	MMTTIGI	VLLSQSTI	PETILELT	DALALGM
	190	200	210	220	230
HCV	120	130	140	150	160
	KRYIS	WCLW	LQYFL	TRVEA	QLHVW
MNWVD1	NAVIL	QNAWK	VSC	TILAV	VSVSP
	250	260	270	280	290
HCV	180	190	200	210	220
	FGPLW	ILQAS	LLKVP	YF-VRV	QGLLRF
MNWVD1	KKRS	WPLNE	AIMAV	GMVSI	LASSLL
	300	310	320	330	340
HCV	240	250	260	270	280
	TPLRD	WAHNG	LRDLA	VAVEP	VVFSQ
MNWVD1	ADV	K-WED	QAEIS	GSSPIL	SITISE
	360	370	380	390	400
HCV	300	310	320	330	340
	PADGM	VSKGW	RLLAP	ITAYA	QQTRG
MNWVD1	V	SIPIT	AAAW	LWEV	KKQRA
	420	430	440	450	460
HCV	360	370	380	390	400
	INGVC	WTYH	GAGTR	TIASPK	GPIQMY
MNWVD1	K	ETFT	MWHV	TRGAV	LMHKG
	480	490	500	510	520
HCV	420	430	440	450	460
	LYLV	TRHAD	VIPV	RRRG	DSRGS
MNWVD1	P	GKNP	RAVQ	TKPGL	FKTN--
	540	550	560	570	580



FIG. 42B

HCV 480 490 500 510 520 530
AKAVDFIPVENLETTMRSPVFTDNSSPPVVPQSFOVAHLHAPTGSQKS--TKVPAAYAAQ
MNWVD1 AYVSAIAQTEK--SIEDNPEIEDDIFRK---RKLTIMDLHPGAGKTKRYLPAIVRGAIKR
 600 610 620 630 640

HCV 540 550 560 570 580
GYKVLVLNPS--VAATLGFGAYMSKAHGIDPNIRTGVRTITTGSPITYSTYGKFLADGGC
MNWVD1 GLRTLILAPTRVVAAEMEEALRGLPIRYQTPAIRAEHTGREIVDLMCHATFTMRLL-SPV
 650 660 670 680 690 700

HCV 590 600 610 620 630 640
SGGAYDIIICDECHSTDATSILGIGTVLDQAETAGARLVVLATATPPGSVTVPHPNIEEV
MNWVD1 RVPNYNLIIMDEAHFTDPASIAARGYISTRVE-MGEAAGIFMTATPPGSRD-PFPQSNAP
 710 720 730 740 750 760

HCV 650 660 670 680 690 700
ALSTTGEIPFYGKAIPLEVIKGGRRHLIFCHSKKKCELA AAKLVALGINAVAYYRGLDVSV
MNWVD1 IMDEEREIPERSWSSGHEWVTD FKGKT VWFVPSIKAGNDTAACLRKNGKKVTQLSRKTFD
 770 780 790 800 810 820

HCV 710 720 730 740 750 760
IPTSGDVVVVATDALMTGYTGDFDSVIDCNTCVTQTVD FSLDPTFTIETITL PQDAVSRT
MNWVD1 SEYVKTRTNDWNFVTTDISEMGANFKAERVIDPRRCMKPVILTDGEERVILAGPMPVTH
 830 840 850 860 870 880

HCV 770 780 790 800 810 820
QRRGRTGRGKPGIYRFVAPGERPSGMFDSSVLCECYDAGCAWYELTPAETTVRLRAYMNT
MNWVD1 SS

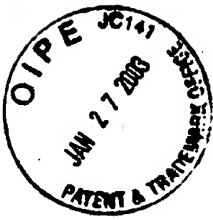


FIG. 43

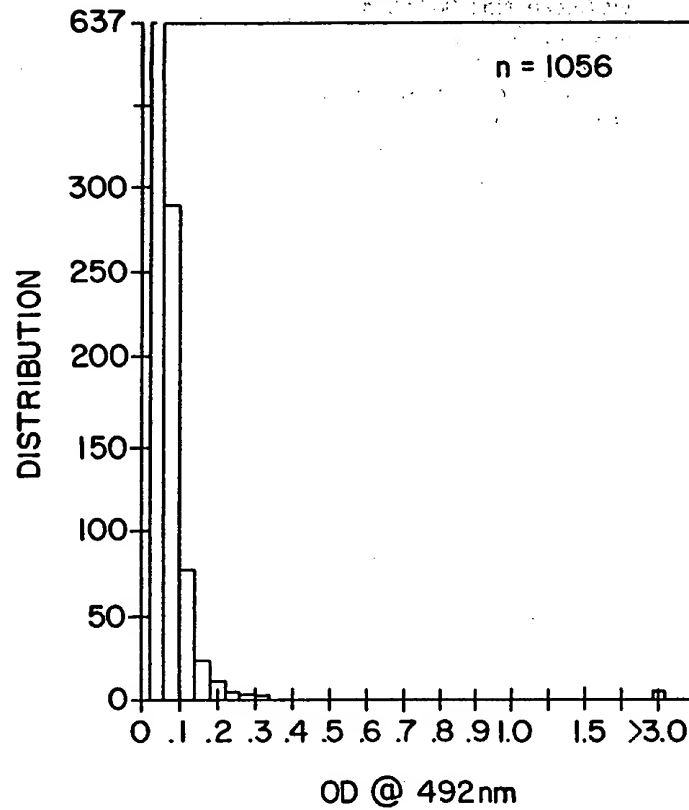


FIG. 44

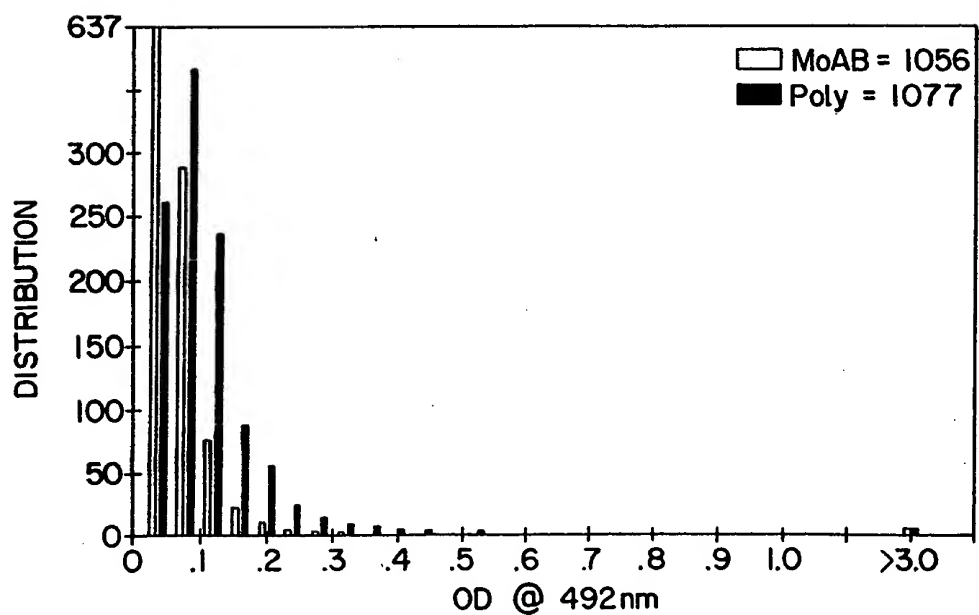




FIG. 45

<u>Name</u>	<u>Common Sequence</u>	<u>Variable Sequence</u>
5'-3-1	AAGCTTGATCGAATTC	CGATCTTGC
-2		CGATCCTGC
-3		CGATCATGC
-4		CGATCGTGC
-5		CGAAGTTGC
-6		CGAAGCTGC
-7		AGATCTTGC
-8		AGATCCTGC
-9		AGATCATGC
-10		AGATCGTGC
-11		AGAAGTTGC
-12		AGAAGCTGC
-13		CGATCTTGT
-14		CGATCCTGT
-15		CGATCATGT
-16		CGATCGTGT
-17		CGAAGTTGT
-18		CGAAGCTGT
-19		AGATCTTGT
-20		AGATCCTGT
-21		AGATCATGT
-22		AGATCGTGT
-23		AGAAGTTGT
-24		AGAAGCTGT
-25		CGCTCTTGC
-26		CGCTCCTGC
-27		CGCTCATGC
-28		CGCTCGTGC
-29		CGCAGTTGC
-30		CGCAGCTGC
-31		CGCTCTTGT
-32		CGCTCCTGT
-33		CGCTCATGT
-34		CGCTCGTGT
-35		CGCAGTTGT
-36		CGCAGCTGT



FIG. 46A

GlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGly
1 CAGGCTGTCCTGAGAGGCTAGCCAGCTGCCGACCCCTTACCGATTGTGACCAAGGCTGGG
GTCCGACAGGACTCTCCGATCCGTCGACGGCTGGGAATGGCTAAACTGGTCCCCGACCC

ProIleSerTyrAlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrPro
61 GCCCTATCAGTTATGCCAACGGAACGGCCCCCGACCAAGCCCCCTACTGTGGCACTACC
CGGATAGTCAATACGGTTGCCCTTCGCCGGGGCTGGTCGGGGATGACGACCGTGATGG

ProLysProCysGlyIleValProAlaLysSerValCysGlyProValTyrCysPheThr
121 CCCCAAAACCTTGCGGTATTGTGCCCGCGAAGAGTGTGTGTCGGTCCGGTATATTGCTTCA
GGGGTTTGGAAACGCCATAACACGGGCGCTTCTCACACACACACAGGCCCATATAACGAAGT

ProSerProValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGly
181 CTCCCAGCCCCGTGGTGGGAACGACCGACAGGTCCGGCGCGCCACCTACAGCTGGG
GAGGTCGGGGCACCAACCCCTTGCTGGCTGTCCAGCCCCCGCGGGTGATGTCGACCC

GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
241 GTGAAAATGATACGGACGCTCTCGTCCTTAACAATACCAGGCCACCGCTGGGCAATTGGT
CACTTTTACTATGCCGTGCAGAACGAGGAATTGTTATGTCGGTGGCGACCCGTTAACCA

GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
301 TCGGTTGTACCTGGATGAACCTCAACTGGATTCAACAAAGTGTGGGAGCGCCTCCTTGTG
AGCCAAACATGGACCTACTTGAGTTGACCTAAGTGGTTTCACACAGCCTCGCGGAGGAACAC



FIG. 46B

IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisPro
361 TCATCGAGGGCGGCAACAACACCCCTGCACCTGCCACTGATTGCTCCGCAAGCATC
AGTAGCCCTCCCCCGCTTGTGTGGACGTGACGGGTGACTAACGAAGGCTTCGTAG

AspAlaThrTyrSerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAsp
421 CGGACGCCACATACTCTCGGTGCGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTCG
GCCTGCGGTGTATGAGAGCCACGCCGAGGCCAGGACCTAGTGTGGTCCACGGACACG

TyrProTyrArgLeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArg
481 ACTACCCGTATAGGCTTTGGCATTATCCTTGTACCATCAACTACTATATTTAAATCA
TGATGGGCATATCCGAAACCGTAATAGGAACATGGTAGTTGATGTATATAAATTTTAGT

MetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
541 GGATGTACGTGGAGGGGTCCGAGCACAGGCTGGAAAGTCCCTGCACACTGGACGCGGGCG
CCTACATGCACCCCTCCCCAGCTCGTGTCCGACCTTCGACGGACGTTGACCTGCGCCCCGC

ArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeuLeuThrThrThr
601 AACGTTGCGATCTGGAAGATAGGACAGGTCCGAGCTCAGCCCGTTACTGCTGACCACTA
TTGCAACGCTAGACCTTCTATCCCTGTCCAGGCTCGAGTCGGGCAATGACGACTGGTGAT

GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIle
661 CACAGTGGCAGGTCTCCCGTGTTCCTTCAAAACCCCTGCCAGCCTTGTCCACCGGCTCA
GTGTCAACCGTCCAGGAGGGCACAAAGGAAGTGTGGGACGGTCCGGAACAGGTGGCCGGAGT



FIG. 46C

-----Overlap with Combined ORF of DNAs 12f through 15e-----
HisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAla
721 TCCACCTCCACCAGAACATTGTGGACGTGCAGTACTTGTACGGGTGGGTCAAGCATCG
AGGTGGAGGTGGTCTTGTAAACACCTGCACGTCATGAACATGCCCCACCCAGTTCGTAGC

SerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeuAlaAspAlaArg
781 CGTCTGGGCCATTAAAGTGGAGTACGTCCTCCTGTTCTTCTGCTTGCAGACGCGC
GCAGGACCCGGTAATTCAACCTCATGCAGCAGGAGACAAAGGAAGACGAACGTCTGCGCG

ValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsn
841 GCGTCTGCTCCTGCTGTGGATGATGCTACTCATATCCCAAGCGGAAGCGCTTTGGGAGA
CGCAGACGAGGACGAACACCTACTACGATGAGTATAGGTTGCGCTTCCGCCGAAACCTCT

LeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuVal
901 ACCTCGTAATACTTAATGCAGCATCCCTGGCCGGACGCACGGTCTTGATCCTTCCTCG
TGGAGCATTATGAATTACGTCGTAGGGACCGCCCTGCGTGCCAGAACATAGGAAGGAGC

PhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPhe
961 TGTTCCTTCTGCTTTGCATGGTATCTGAAGGGTAAGTGGTGCCCCGAGCGGTCTACACCT
ACAAGAGACGAAACGTACCATAGACTTCCCATTCACCCACGGGCTCGCCAGATGTGGA



LeuLeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAla
11321 AATTGCTGCTGGCCGCTTTCGGACCCCTTTGGATTCTTCAAGCCAG
TTAACGACGACCGGCAGAGCCTGGGGAAACCTAAGAAAGTTCGGTC



FIG. 47A

1 GlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGly
CAGGCTGTCCTGAGAGGCTAGCCAGCTGCCGACCCCTTACCGATTTTGACCAGGGCTGGG
GTCCGACAGGACTCTCCGATCGGTCGACGGCTGGGGAATGGCTAAACTGGTCCCGACCC

61 ProIleSerTyrAlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrPro
GCCCTATCAGTTATGCCAACGGAAGCGGCCCGACCGAGCGCCCTACTGCTGGCACTACC
CGGGATAGTCAATACGGTTGCCTTCGCCGGGGCTGGTCGCCGGGGATGACGACCGTGATGG

121 ProLysProCysGlyIleValProAlaLysSerValCysGlyProValTyrCysPheThr
CCCCAAACCTTGCGGTATTGTGCCCGCGAAGAGTGTGTGGTCCGGTATATTGCTTCA
GGGGTTTTGGAACGCCATAACAGGGCGCTTCTCACACACACAGGCCATATAACGAAGT

181 ProSerProValValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGly
CTCCAGCCCCGTGGTGGTGGGAACGACCGACAGGTGCGGCGCGCCACCTACAGCTGGG
GAGGGTCGGGGCACCACCACCTTGTGCTGTCCAGCCGCGCGGGTGATGTCGACCC

241 GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
GTGAAAATGATACGGACGTCTTCGTCTTAACAATACAGGCCACCGCTGGGCAATTGGT
CACTTTTACTATGCCTGCAGAACGAGGAATTGTTATGGTCCGGTGGCGACCCGTTAACCA

301 GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
TCGGTTGTACCTGGATGAACCTCAACTGGATTACCAAAGTGTGCGGAGCGCTCCTTGTG
AGCCAACATGGACCTACTTGAGTTGACCTAAGTGGTTTACACGCCTCGCGGAGGAACAC

361 IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisPro
TCATCGGAGGGGCGGGCAACAACACCCTGCACTGCCCACTGATTGCTTCGCAAGCATC
AGTAGCTCCCCGCGCGTTGTGTGGGACGTGACGGGGTGACTAACGAAGGCGTTCTGATG

421 AspAlaThrTyrSerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAsp
CGGACGCCACATACTCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCTGGTGG
GCCTGCGGTGTATGAGAGCCACGCCGAGGCCAGGGACCTAGTGTGGGTCCACGGACCAAG

481 TyrProTyrArgLeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArg
ACTACCGTATAGGCTTTGGCATTATCCTTGTACCATCAACTACCATATTTTAAATCA
TGATGGGCATATCCGAAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAATTTAGT

541 MetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
GGATGTACGTGGGAGGGGTGGAACACAGGCTGGAAGCTGCCTGCAACTGGACGCGGGGCG
CCTACATGCACCCTCCCCAGCTTGTGTCCGACCTTCGACGGACGTTGACCTGCGCCCCGC

601 ArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThrThr
AACGTTGCGATCTGGAAGACAGGGACAGGTCCGAGCTCAGCCCGTTACTGCTGACCACTA
TTGCAACGCTAGACCTTCTGTCCCTGTCCAGGCTCGAGTCGGGCAATGACGACTGGTGAT

661 GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIle
CACAGTGGCAGGTCTCCCGTGTCTTCCACCAACCCTACCAGCCTGTCCACCGGCCTCA
GTGTCACCGTCCAGGAGGGCACAAGGAAGTGTGGGATGGTGGAAACAGGTGGCCGGAAT

721 HisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAla
TCCACCTCCACCAGAACATTGTGGACGTGCAGTACTTGTACGGGGTGGGGTCAAGCATCG
AGGTGGAGGTGGTCTTGTAAACACCTGCACGTCATGAACATGCCCCACCCAGTTCTGATG

781 SerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeuAlaAspAlaArg
CGTCCTGGGCCATTAAGTGGGAGTACGTGCTTCTCCTGTTCTTCTGCTTGACAGACGCGC
GCAGGACCCGGTAATTCACCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCG

841 ValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsn
GCGTCTGCTCCTGCTTGTGGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGA
CGCAGACGAGGACGAACACCTACTACGATGAGTATAGGGTTCGCTCCGCCGAAACCTCT

901 LeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuVal
ACCTCGTAATACTTAATGCAGCATCCCTGGCCGGGACGACGGTCTTGTATCCTTCTCG
TGGAGCATTATGAATTACGTCGTAGGGACCGCCCTGCGTGCCAGAACATAGGAAGGAGC



FIG. 47B

PhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrIhrPhe
961 TGTTCCTTCTGCTTTGCATGGTATTTGAAAGGGTAAGTGGGTGCCCGAGCGGTCTACACCT
ACAAGAAGACGAAACGTACCATAAACTTCCCATTACCCACGGGCTCGCCAGATGTGGA

TyrGlyMetTrpProLeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeu
1021 TCTACGGGATGTGGCCTCTCCTCCTGCTCCTGTTGGCGTTGCCCAAGCGGGCTACGCGC
AGATGCCCTACACGGAGAGGAGGACGAGGACAACCGCAACGGGGTCCGCCGATGCGCG

AspThrGluValAlaAlaSerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThr
1081 TGGACACGGAGGTGGCCGCGTCGTGTGGCGGTGTTGTCTCGTCGGGTTGATGGCGCTGA
ACCTGTGCCTCCACCGGCGCAGCACACCGCCACAACAAGAGCAGCCAACTACCGCGACT

LeuSerProTyrTyrLysArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeu
1141 CTCTGTCAACATATTACAAGCGCTATATCAGCTGGTCTTGTGGTGGCTTCACTATTTTC
GAGACAGTGGTATAATGTTCCGATATAGTCGACCACGAACACCGAAGTCATAAAAG

ThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArg
1201 TGACCAGAGTGGAAAGCGCAACTGCACGTGTGGATTCCCCCTCAACGTCGAGGGGGC
ACTGGTCTCACCTTCGCGTTGACGTGCACACCTAAGGGGGGGAGTTGCAGGCTCCCCCG

AspAlaValIleLeuLeuMetCysAlaValHisProThrLeuValPheAspIleThrLys
1261 GCGACGCGCTCATCTTACTCATGTGTGCTGTACACCGACTCTGGTATTTGACATCACCA
CGCTGCGGCAGTAGAATGAGTACACACGACATGTGGGCTGAGACCATAAACTGTAGTGGT

LeuLeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValPro
1321 AATTGCTGCTGGCGCTCTTCGGACCCCTTTGGATTCTTCAAGCCAGTTTGTCTAAAGTAC
TTAACGACGACCGGCAGAAAGCCTGGGAAACCTAAGAAGTTCGGTCAAACGAATTTTCATG

TyrPheValArgValGlnGlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGly
1381 CCTACTTTGTGCGCGTCCAAAGGCTTCTCCGGTTCTGCGGTTAGCGCGGAAGATGATCG
GGATGAAACACGCGCAGGTTCCGGAAGAGGGCAAGACGCGCAATCGCGCTTCTACTAGC

GlyHisTyrValGlnMetValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyr
1441 GAGGCCATTACGTGCAAAATGGTCATCATTAAAGTTAGGGGCGCTTACTGGCACCTATGTTT
CTCCGGTAATGCACGTTTACCAGTAGTAATTCAATCCCCGCAATGACCGTGGATACAAA

AsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAla
1501 ATAACCATCTCACTCTCTTCGGGACTGGGCGCACACGGCTTGCAGAGATCTGGCCGTGG
TATTGGTAGAGTGAGGAGAAGCCCTGACCCGCGTGTGCGCAACGCTTAGACCGGCACC

ValGluProValValPheSerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThr
1561 CTGTAGAGCCAGTCGTCTTCTCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATA
GACATCTCGGTCAGCAGAAAGAGGTTTACCTCTGGTTCGAGTAGTGCACCCCCGCTAT

AlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArgArgGlyArgGluIle
1621 CCGCCGCGTGGCGGTGACATCATCAACGGCTTGCCTGTTTCCGCCGAGGGGGCGGGA
GGCGGCGCACGCCACTGTAGTAGTTGCCGAACGGACAAAGCGGGGCTCCCCGGCCCTCT

LeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThr
1681 TACTGCTCGGGCCAGCCGATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCATCA
ATGACGAGCCCGGTGCGCTACCTTACCAGAGGTTCCCACTCCAACGACCGCGGGTAGT

AlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArg
1741 CGGCGTACGCCCAGCAGACAAGGGGCTCTAGGGTGCTAATACCAAGCCTAACTGGCC
GCCGATGCGGGTCGTCTGTTCCCGGAGGATCCACGTATTAGTGGTGGATTGACCGG

AspLysAsnGlnValGluGlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeu
1801 GGGACAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGTCAACTGCTGCCAAACCTTCC
CCCTGTTTTTGGTTCACCTCCCACTCCAGGTCTAACACAGTTGACGACGGGTTTGGAAAG

AlaThrCysIleAsnGlyValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIle
1861 TGGCAACGTGCATCAATGGGGTGTGCTGGACTGTCTACCACGGGGCGGAACGAGGACCA
ACCGTTGCACGTAGTTACCCACACGACCTGACAGATGGTGGCCCGGCTTGTCTCTGGT

AlaSerProLysGlyProValIleGlnMetTyrThrAsnValAspGlnAspLeuValGly
1921 TCGCGTCACCAAGGGTCTGTCTCATCCAGATGTATACCAATGTAGACCAAGACCTTGTGG

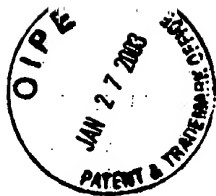


FIG. 47C

TrpProAlaProGlnGlySerArgSerLeuThrProCysThrCysGlySerSerAspLeu
1981 GCTGGCCCGCTCCGCAAGGTAGCCGCTCATTGACACCCTGCACTTGGCGGCTCCTCGGACC
CGACCGGGCGAGGCGTTCCATCGGCGAGTAAGTGTGGGACGTGAACGCCGAGGAGCCTGG

TyrLeuValThrArgHisAlaAspValIleProValArgArgArgGlyAspSerArgGly
2041 TTTACCTGGTCACGAGGACGCGGATGTCTTCCGTGCGCGGGCGGGGTATAGCAGGG
AAATGGACCACTGCTCCGTGCGGCTACAGTAAGGGACGCGGCGGCCCACTATCGTCCC

SerLeuLeuSerProArgProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeu
2101 GCAGCCTGCTGTGCGCCCGGCCATTTCTACTTGAAAGGCTCCTCGGGGGGTCCGCTGT
CGTCGGACGACAGCGGGGGCGGGTAAGGATGAAGTTTCCGAGGAGCCCCCAGGCGACA

CysProAlaGlyHisAlaValGlyIlePheArgAlaAlaValCysThrArgGlyValAla
2161 TGTGCCCCGCGGGGACGCGGTGGGCATATTTAGGGCCGCGGTGTGCACCCGTGGAGTGG
ACACGGGGCGCCCCGTGCGGCACCCGTATAAATCCGCGGCCACACGTGGGCACCTCACC

LysAlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPhe
2221 CTAAGCGGGTGGACTTTATCCCTGTGGAGAACCTAGAGACAACCATAGGTCGCCGGTGT
GATTCCGCCACCTGAAATAGGGACACCTCTTGATCTCTGTGGTACTCCAGGGGCCACA

ThrAspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAla
2281 TCACGGATAACTCCTCTCCACCAAGTAGTGGCCAGAGCTTCCAGGTGGCTCACCTCCATG
AGTGCTATTGAGGAGAGGTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTAC

ProThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLys
2341 CTCCACAGGCAGCGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATA
GAGGGTGTCCGTGCGCTTTTCTGTGTTCCAGGGCCGACGTATACGTGAGTCCCGATAT

ValLeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLys
2401 AGGTGCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGTACATGTCCA
TCCACGATCATGAGTTGGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGT

AlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerPro
2461 AGGCTCATGGGATCGATCCTAATCAGGACCGGGGTGAGAACATTACCACTGGCAGCC
TCCGAGTACCCTAGCTAGGATTGTAGTCTGGCCCCACTCTGTTAATGGTGACCGTCGG

IleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyr
2521 CCATCACGTACTCCACCTACGGCAAGTTCTTGCCGACGGCGGGTGTCTGGGGGGGCGCTT
GGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAA

AspIleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGly
2581 ATGACATAATAATTTGTGACGAGTGCCACTCCACGGATGCCACATCCATTCTGGGCATCG
TACTGTATTATTAACACTGCTCAGGTTGAGGTGCTACGGTGTAGGTAGAACCCTGAGC

ThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThr
2641 GCACTGTCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCA
CGTGACAGGAAGTGGTTCGTCTCTGACGCCCCGCTCTGACCAACACGAGCGGTGGCGGT

ProProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThr
2701 CCCCTCCGGGCTCCGTCACTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCA
GGGGAGGCCCGAGGAGTGACACGGGGTAGGGTTGTAGCTCCTCAACGAGACAGGTGGT

GlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHis
2761 CCGGAGAGATCCCTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGAC
GGCCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCTCTG

LeuIlePheCysHisSerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeu
2821 ATCTCATCTTCTGTCTTCAAGAAAGAGTGGCAGCAACTCGCCGCAAGGCTGGTGGCAT
TAGAGTAGAAGACAGTAAGTTTCTTCTTACGCTGCTTGAAGCGCGTTTCGACCAAGCGTA

GlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGly
2881 TGGGCATCAATGCCGTGGCCTACTACCGCGGTCTTGACGTGTCCGTATCCCGACCAAGCG
ACCCGTAGTTACGGCACCGGATGATGGCGCCAGAACTGCACAGGCAAGTAGGGCTGGTCG

AspValValValAlaAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSer
2941 GCGATGTTGTGCTGCTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACT
CGCTACAACAGCAGCACCGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGA

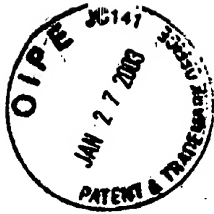


FIG. 47D

ValIleAspCysAsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPhe
3001 CGGTGATAGACTGCAATACGTGTGTACCCAGACAGTCGATTTACGCTTGACCTACCT
GCCACTATCTGACGTTATGCACACAGTGGGTCTGTCTAGCTAAAGTCGGAACGGGATGGA

ThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
3061 TCACCATTTGAGACAATCACGCTCCCCAGGATGCTGTCTCCGCACTCAACGTCGGGGCA
AGTGGTAACCTCTGTTAGTGCAGGGGGTCTACGACAGAGGGCGTGAGTTGCAGCCCCGT

ThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGly
3121 GGACTGGCAGGGGGAAGCCAGGCATCTACAGATTTGTGGCACCAGGGGAGCGCCCTCCG
CCTGACCGTCCCCCTTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGAGGC

MetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeu
3181 GCATGTTTCACTCGTCCGTCTCTGTGAGTGTATGACGCAGGCTGTGCTTGGTATGAGC
CGTACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCTCCGACACGAACCATACTCG

ThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProVal
3241 TCACGCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGCTTCCCG
AGTGGGGCGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGC

CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
3301 TGTGCCAGGACCATCTTGAAATTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATG
ACACGGTCTGTTAGAACTTAAACCTCCCGCAGAAATGTCCGGAGTGAGTATATCTAC

HisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGln
3361 CCCACTTTCTATCCAGACAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACC
GGGTGAAAGATAGGGTCTGTTTCTGTCTACCCCTCTTGAAGGAATGGACCATCGCATGG

AlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCys
3421 AAGCCACCGTGTGCGCTAGGGCTCAAGCCCTCCCCATCGTGGGACCAGATGTGGAAGT
TTCGGTGGCACACGCGATCCCGAGTTCGGGGAGGGGGTAGCACCTGGTCTACACCTTCA

LeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAla
3481 GTTTGATTGCGCTCAAGCCACCTCCATGGGCCAACCCCTGCTATACAGACTGGGCG
CAAACATAAGCGGAGTTGCGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGC

ValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSer
3541 CTGTTGAGAATGAAATCACCTGACGACCCAGTCACCAATATCATGATGATGATGT
GACAACTTCTTACTTTAGTGGGACTGCGTGGGTCAAGTGGTTTATGTAGTACTGTACGTACA

AlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeu
3601 CGGCCGACCTGGAGGTCGTACGAGCACCTGGGTGCTCGTTGGCGGCGTCTGGCTGCTT
GCCGGCTGGACCTCCAGCAGTGTCTGTGAGCCACGAGCAACGCCGAGGACCGACGAA

AlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGly
3661 TGGCCGCGTATTGCTGTCAACAGGCTGCGTGGTCATAGTGGGACGGGTCTGTTGCTCG
ACCGGCGCATAACGGACAGTTGTCCGACGCACCACTATCACCCGTCCAGCAGAACAGGC

LysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGlu
3721 GGAAGCCGGCAATCATACCTGACAGGGAAGTCTCTACCGAGAGTTGATGAGATGGAAG
CCTTCGGCCGTTAGTATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTC

CysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGln
3781 AGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGC
TCACGAGAGTCGTGAATGGCATGTAGCTCGTTCCTACTACGAGCGGCTCGTCAAGTTCCG

LysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaVal
3841 AGAAGGCCCTCGGCCTCTGACAGCCGCTCCGTCAGGCAGAGGTTATCGCCCTGCTG
TCTTCCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCAATAGCGGGGACGAC

GlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSer
3901 TCCAGACCAACTGGCAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCA
AGGTCTGGTTGACCGTTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGT

GlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeu
3961 GTGGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCAT
CACCTATGTTATGAACGCCCGAACAGTTGCGACGGACCATTTGGGGCGGTAACGAAGTA



FIG. 47E

MetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsn
4021 TGATGGCTTTTACAGCTGCTGTACCAAGCCCACTAACCCTAGCCAAACCTCCTCTTCA
ACTACCGAAAATGTCGACGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGAGAAGT

IleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheVal
4081 ACATATTGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCCCGGTGCCGCTACTGCCTTTG
TGTATAACCCCCCACCACCGAGGGTCGAGCGGCGGGGGCCACGGCGATGACGGAAAC

GlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAsp
4141 TGGGCGCTGGCTTAGCTGGCGCCGCCATCGGCACTGTTGGACTGGGGAAGGTCTCATAG
ACCCGCGACCGAATCGACGCGGCGGTAGCCGTACAACCTGACCCCTTCCAGGAGTATC

IleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSer
4201 ACATCCTTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGA
TGTAGGAACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACT

GlyGluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGly
4261 GCGGTGAGGTCCCTCCACGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCG
CGCCACTCCAGGGGAGGTGCTCCTGGACCACTTAGATGACGGGCGGTAGGAGAGCGGGC

AlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGlu
4321 GAGCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCG
CTCGGGAGCATCAGCCGCACCAAGACACGTCGTTATGACGCGCCGTGCAACCGGGGCCGC

GlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
4381 AGGGGGCAGTGCACTGGATGAACCGGCTGATAGCCTTCGCTCCGGGGGGAACCATGTTT
TCCCCGTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAA

ProThrHisTyrValProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSer
4441 CCCCCACGCACTACGTGCCGAGAGCGATGCACTGCCCGCGTCACTGCCATACTCAGCA
GGGGGTGCGTGATGCACGGCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGT

LeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThr
4501 GCCTCACTGTAACCCAGCTCCTGAGGCGACTGCACCACTGGATAAGCTCGGAGTGATACCA
CGGAGTGACATTGGGTGAGGACTCCGCTGACGTGGTCACCTATTGAGCCTCACATGGT

ProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAsp
4561 CTCCATGCTCCGGTTCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCG
GAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACCTCGC

PheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGlyIleProPheValSer
4621 ACTTTAAGACCTGGCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCCTTTGTGT
TGAAATTCTGGACCGATTTTTCGATTGAGTACGGTGTGACGCGACCCTAGGGGAAACACA

CysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMetHisThrArgCysHis
4681 CCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGTGGACGGCATGACACTCGTGGC
GGACGGTCCGCGCCATATTCCCCAGACCCTCACCTGCCGTAGTACGTGTGAGCGACGG

CysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArg
4741 ACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCTTA
TGACACCTCGACTCTAGTGACCTGTACAGTTTTTGCCTGCTACTCTAGCAGCCAGGAT

ThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCys
4801 GGACCTGCAGGAACATGTGGAGTGGGACCTTCCCCATTAAATGCCTACACCACGGGCCCT
CCTGGACGTCTTGTACACCTCACCTGGAAGGGGTAATTACGGATGTGGTGCCCGGGGA

ThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyr
4861 GTACCCCCCTTCTGCGCCGAACCTACACGTTTCGCGCTATGGAGGGTGTCTGCAGAGGAAT
CATGGGGGGAAGGACGCGGCTTGATGTGCAAGCGGATACCTCCACAGACGTCTCCTTA

ValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeu
4921 ATGTGGAGATAAGGCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATC
TACACCTCTATTCCGTCCACCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAG

LysCysProCysGlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeu
4981 TCAAATGCCCGTGCGAGGTCCCATCGCCCGAATTTTTACAGAAATGGACGGGGTGGCGC
AGTTTACGGGCACGGTCCAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGG

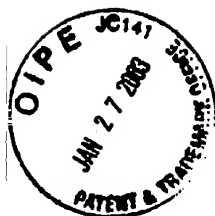


FIG. 47F

HisArgPheAlaProProCysLysProLeuLeuArgGluGluValSerPheArgValGly
5041 TACATAGGTTTGC GCCCCTGCAAGCCCTTGCTGCGGAGGAGGTATCATTAGAGTAG
ATGTATCCAAACGCGGGGGACGTTTCGGGAACGACGCCCTCCTCCATAGTAAGTCTCATC

LeuHisGluTyrProValGlySerGlnLeuProCysGluProGluProAspValAlaVal
5101 GACTCCACGAATACCCGGTAGGGTCGCAATTACCTTGCGAGCCCGAACCGACGTGGCCG
CTGAGGTGCTTATGGGCCATCCAGCGTTAATGGAACGCTCGGGCTTGGCTGCACCGGC

LeuThrSerMetLeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeu
5161 TGTTGACGTCCATGCTCACTGATCCCTCCCATATAACAGCAGAGGCGGCCGGCGAAGGT
ACAACTGCAGGTACGAGTGACTAGGGAGGGTATATTGTCGTCTCCGCGGCCGCTTCCA

AlaArgGlySerProProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSer
5221 TGGCGAGGGGATCACCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGTATCCGCTCCAT
ACCGCTCCCTAGTGGGGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCGAGGTA

LeuLysAlaThrCysThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsn
5281 CTCTCAAGGCAACTTGCACCGCTAACCATGACTCCCTGATGCTGAGCTCATAGAGGCCA
GAGAGTTCGGTTGAACGTGGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGT

LeuLeuTrpArgGlnGluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysVal
5341 ACCTCCTATGGAGGCAGGAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAAACAAAG
TGAAGGATACCTCCGTCTCTACCCGCCGTTGTAGTGGTCCCACTCAGTCTTTTGTTC

ValIleLeuAspSerPheAspProLeuValAlaGluGluAspGluArgGluIleSerVal
5401 TGGTGATTCTGGACTCCTTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCG
ACCACTAAGACCTGAGGAAGCTAGGCGAACACCGCCTCCTCCTGCTGCCCTCTAGAGGC

ProAlaGluIleLeuArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArg
5461 TACCCGAGAAATCCTGCGGAAGTCTCGGAGATTGCGCCAGGCCCTGCCGTTTGGGCGC
ATGGGCGTCTTTAGGACGCCCTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAAACCGCG

ProAspTyrAsnProProLeuValGluThrTrpLysLysProAspTyrGluProProVal
5521 GGCGGACTATAACCCCGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACACCTG
CCGGCTGATATTGGGGGGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGAC

ValHisGlyCysProLeuProProProLysSerProProValProProArgLysLys
5581 TGGTCCATGGCTGTCCGCTTCCACCTCAAAGTCCCTCCTGTGCCTCCGCTCGGAAGA
ACCAGGTACCGACAGGCGAAGGTGGAGGTTTCAGGGGAGGACACGGAGCGGAGCCTCT

ArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArg
5641 AGCGGACGGTGGTCTCACTGAATCAACCTATCTACTGCCTTGGCCGAGCTCGCCACCA
TCGCCGCCACCAAGAGTGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGT

SerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGlu
5701 GAAGCTTTGGCAGCTCCTCAACTTCGGCATTACGGGCGACAATACGACAACATCCTCTG
CTTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTGTTGTAGGAGAC

ProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSerMetProPro
5761 AGCCCGCCCTTCTGGCTGCCCCCGGACTCCGACGCTGAGTCTATTCTCCATGCCCC
TCGGGCGGGGAAGACCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGG

LeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSer
5821 CCCTGGAGGGGGAGCCTGGGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCACTA
GGGACCTCCCCCTCGAACCCCTAGGCTAGAATCGCTGCCAGTACCAAGTTGCCAGTCA

GluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeu
5881 GTAGGCCAACGCGGAGGATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCAC
CACTCCGGTTGCGCTCTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTG

ValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeu
5941 TCGTCACCCCGTGCGCCGCGGAAGAACAGAACTGCCCATCAATGCACTAAGCAACTCGT
AGCAGTGGGGCACGCGGCGCCTTCTTGTCTTTGACGGGTAGTTACGTGATTCTGTGAGCA

LeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLys
6001 TGCTACGTACCCACAATTTGGTGTATTCCACCACCTCACGAGTGCTTGCCAAAGGCAGA
ACGATGCAGTGGTGTTAAACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGCTCT

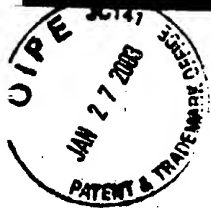


FIG. 47G

LysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGlu
6061 AGAAAGTCACATTTGACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGG
TCTTTCAGTGTAACCTGTCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCC

ValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSer
6121 AGGTTAAAGCAGCGGCGTCAAAAGTGAAGGCTAAGTTGCTATCCGTAGAGGAAGCTTGCA
TCCAATTTGCTGCGCGCAGTTTTCACTTCCGATTGAACGATAGGCATCTCTCGAACGT

LeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCys
6181 GCCTGACGCCCCACACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTT
CGGACTGCGGGGGTGTGAGTCGGTTTAGGTTCAAACCAATACCCGTTTTCTGCAGGCAA

HisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAspLeuGluAspAsn
6241 GCCATGCCAGAAAGGCCGTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACA
CGGTACGGTCTTTCGCGCATTGGGTGTAGTTGAGGCACACCTTCTGGAAGACCTTCTGT

ValThrProIleAspThrThrIleMetAlaLysAsnGluValPheCysValGlnProGlu
6301 ATGTAACACCAATAGACACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTACGCTG
TACATTGTGGTTATCTGTGATGGTAGTACCGATTCTTGCTCCAAAGACGCAAGTCGGAC

LysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeuGlyValArgValCys
6361 AGAAGGGGGGTCGTAAGCCAGCTCGTCTCATCGTGTCCCCGATCTGGGCGTGGCGGTGT
TCTTCCCCCAGCATTGGTTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACA

GluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAlaValMetGlySerSer
6421 GCGAAAAGATGGCTTTGTACGACGTGGTTACAAAGCTCCCTTGGCCGTGATGGGAAGCT
CGCTTTTCTACCGAAACATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCCCTTCA

TyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSer
6481 CCTACGGATTCCAATACTCACCAGGACAGCGGGTTGAATTCCTCGTGAAGCGTGGAAAT
GGATGCCAAGGTTATGAGTGGTCTGTGCCCACTTAAGGAGCAGGTTCCGACCTTCA

LysLysThrProMetGlyPheSerTyrAspThrArgCysPheAspSerThrValThrGlu
6541 CCAAGAAAACCCCAATGGGGTTCTCGTATGATACCCGCTGCTTGGACTCCACAGTCACTG
GGTTCTTTGGGGTTACCCCAAGAGCATACTATGGGCGACGAACTGAGGTGTCAAGTGAC

SerAspIleArgThrGluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArg
6601 AGAGCGACATCCGTACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCAAGCCC
TCTCGCTGTAGGCATGCTCTCTCCGTTAGATGGTTACAACACTGGAGTGCGGGGTTCCGG

ValAlaIleLysSerLeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArg
6661 GCGTGGCCATCAAGTCCCTCACCAGAGAGGCTTATGTTGGGGGCCCTTTACCAATTCAA
CGCACCGGTAGTTCAGGGAGTGGCTCTCCGAAATAACAACCCCGGGAGAAATGGTTAAGTT

GlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGly
6721 GGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGCGAGCGGCGTACTGACAAGTACGCTGTG
CCCCCTCTTGACGCCGATAGCGTCCACGGCGGCTCGCCGATGACTGTTGATCGACAC

AsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAsp
6781 GTAACACCCTCACTTGCTACATCAAGGCCCGGGCAGCTGTGAGCGCGCAGGGCTCCAGG
CATTGTGGGAGTGAACGATGTAGTTCGGGGCCCGTGGACAGCTCGGCGTCCCGAGGTCC

CysThrMetLeuValCysGlyAspAspLeuValValIleCysGluSerAlaGlyValGln
6841 ACTGCACCATGCTCGTGTGTGGCGACGACTTAGTCTGTTATCTGTGAAAGCGCGGGGGTCC
TGACGTGGTACGAGCACACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCAAGG

GluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProPro
6901 AGGAGGACGCGGCGAGCCTGAGAGCCTTACGGAGGCTATGACCAAGTACTCCGCCCCC
TCTCTGCGCGCTCGGACTCTCGGAAGTGCTCCGATACTGGTCCATGAGGCGGGGGG

GlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnVal
6961 CTGGGGACCCCCACAACAGAAATACGACTTGGAGCTCATAACATCATGCTCCTCCAAGC
GACCCCTGGGGGGTGTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGC

SerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThr
7021 TGTCAAGTCGCCCACGACGGCGCTGGAAAGAGGGTCTACTACCTACCCGTTGACCTACAA
ACAGTCAGCGGGTGTCTGCCGACCTTCTCCAGATGATGGAGTGGGCACTGGGATGTT

FIG. 47H

7081 ProLeuAlaArgAlaAlaIrpGluThrAlaArgHisThrProValAsnSerTrpLeuGly
CCCCCTCGCGAGAGCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAG
GGGGGGAGCGCTCTCGACGCACTCTGTCGTTCTGTTGAGGTCAGTTAAGGACCGATC

7141 AsnIleIleMetPheAlaProThrLeuIrpAlaArgMetIleLeuMetThrHisPhe
GCAACATATCATGTTTGGCCCCACACTGTGGCGAGGATGATAGTGAACCAATTTCT
CGTTGATTAGTACAACG66666TGTGACACCCGCTCTACTATGACTACTGGGTAAGA

7201 SerValLeuIleAlaArgAspGlnLeuGlnAlaLeuAspCysGluIleTyrglyAla
TTAGCGTCCCTTATAGCCAGGGAGCCAGCTTGAAACAGGCCCTCGATTGCGAGATCTACG666
AATCGCAGGAATATCGGTCCCTGGTCGAACTTGTCCGGGAGCTAACGCTCTAGATGCCCC

7261 CysTyrSerIleGluProLeuAspLeuProIleIleGlnArgLeu
CCTGCTACTCCATAGAACCACTTGAATCACTCAATTCATCAAGACTC
GGACGATGAGGTAATCTTGGTGAACTAGATGGAAGTTAGTAAGTTTCTGAG



FIG. 48

ProSerProValValAlGlyThrThrAspArgSerGlyAlaProThrTyrSerTyrGly
 1CTCCAGACCCCGTGGTGGAGACGACGAGTGGGGCGGCTACCTACAGCTGG
 GAGGTCGGGGCACCACCCTTGCTGGCTGTCCAGCCCGCGGATGATGTGACCC
 GluAsnAspThrAspValPheValLeuAsnThrArgProProLeuGlyAsnTyrPhe
 61GTGAAATGATACGAGCGTCTCGCTTAACAATACAGGCCACCGCTGGCAATTGT
 CACTTTACTATGCCCTGCAGAGCAGGAATTGTATGTCGGTGGCGACCCGTTAACCA
 GlyCysThrTyrMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
 121TCGGTTGACCTGGATGACTCACTGATTCACCAAGTGTGCGAGCGCTCTGTG
 AGCCAACATGGACCTACTGAGTTGACCTAAGTGGTTTCACACGCCCTCGCGAGAACAC
 IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisPro
 181TCATCGGAGGGCGGGCAACACACCTGCACCTGCCCACTGATGCTTCGCAAGCATC
 AGTAGCCTCCCGCCCGTGTGTGGAGCGTGACGGGTGACTAACGAAGCGTTCGTAG
 AspAlaThrTyrSerArgCysGlySerGlyProTyrPleuThrProArgCysLeuValAsp
 241CGGAGCCACATACTCTCGGTGCGGCTCCGCTCCCTGGCTCACACCCAGGTGCTGTCG
 GCTCGCGTGTATGAGAGCCACGCCGAGGCCAGGACCGAGTGTGGTCCACGGACACG
 TyrProTyrArgLeuTyrPheHisTyrProCysThrIleAsnTyrThrIlePheLysIleArg
 301ACTACCCGTATAGGCTTTGGCATTTATCTGTACCATCACTACCATATTTAAATCA
 TGATGGCATATCCGAACCGTAATAGGAACATGTTAGTTGATGTGTTAATTTAGT
 MetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTyrPheArgGlyGly
 361GGATGTACGTGGAGGGGTGAGCACAGGCTGGAAGCTGCCCACTGACGCGGGCG
 CTAACATGCACCCCTCCACAGCTCGTGTCCGACCTTCGACGGACGTTGACCTGCCCGC
 -----Overlap with 12f-----
 ArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThrThr
 421AACGTTGCGATCTGGAAGACAGGACAGGTCGAGCTCAGCCGTTACTGCTGACCACTA
 TTGCAACGCTAGACCTTCTGTCTCTGTCAGGCTCGAGTCGGGCAATGACGACTGGTAT
 GluTyrPheValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeu
 481CACAGTGGCAGGTCCTCCGCTGTCTTCACCAACCTGCCAGCCTGTGTCCACCGGCTCA
 GTGTCAACCGTCCAGAGGGCACCAAGGAAGTGTGGAGCGGTGGAAACAGGTGCGCGGAGT



FIG. 49

LeuphetyrhishislyspheasnserSerglyCysprogluArgleualaserCysArg
1 GCTTTCTATCACCACAGTTCACCTCTCAGGCTGCTCCTGAGAGGCTAGCCAGCTGCCG
CGAAAGATAGTGGTGTTCAGTTGAGAGTCCGACAGGACTCTCCGATCGGTCCGACGGC
ProLeuThrAspPheAspGlnGlyTyrGlyProIleSerTyrAlaAsnGlySerGlyPro
61 ACCCTTACCGATTGTGACCAAGGCTGGGCCCTATCAGTTATGCCAACGGAAGCGGCC
TGGGAATGGCTAAACTGGTCCCGACCCCGGATAGTCAATACGGTTGCCCTCCGCCGG
AspGlnAlrGProTyrCysTrpHisTyrProProLysProCysGlyIleValProAlaLys
121 CGACCAAGCGCCCTACTGCTGGCACTACCCCAAAACCTTGGGTATTGTCGCCGAA
GCTGGTCGGGGGATGACGACCGGTGATGGGGGTTTGGAAACGCCATTAACACAGGGCGCTT
---Overlap with 131---
SerValCysGlyProValTyrCysPheThrProSerProValValVal
181 GAGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCGGTGGTGG
CTCACACACACCAAGCCATATAACGAAGTGAGGTCGGGGCACCAACCAACC



FIG. 50

LeuValMetAlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIleAlaGlyAla
 1 TTGGTATGGCTCAGCTGCTCCGGATCCACAGCCATCTTGACATGATCGCTGGTCT
 AACCATTACCAGAGTCGACGAGGCCCTAGGGTGTTCGGTAGAACCTGTACTAGCGACACGA
 HisTrpGlyValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrpAlaLysVal
 61 CACTGGGAGTCTCGCGGGCATAGCGTATTTCTCCATGGTGGGAAGTGGGGAAGTCTC
 GTGACCCCTCAGGACCGCCCGTATCGCATAAAGAGGTACCACCCCTTGACCCGCTTCCAG
 LeuValValLeuLeuLeuPheAlaGlyValAlaSpAlaGluThrHisValThrGlyGlySer
 121 CTGGTAGTGTGCTGCTATTGTCGGCGTCGACCGGAAACCCACGTCACCGGGGAAGT
 GACCATCACGACGACGATAAACGGCCGACGCTGCCCTTTGGGTGCAGTGGCCCCCTTCA
 AlaGlyHisThrValSerGlyPheValSerLeuLeuAlaProGlyAlaLysGlnAsnVal
 181 GCCGGCCACACTGTGTCTGATTTGTTAGCCTCCTCGCACAGCGCCCAAGCAGAACGTC
 CGGCCGGTGTGACACAGACCTAAACAATCGGAGAGCGGTGTCGCCGCTTCTTGACG
 GlnLeuIleAsnThrAsnGlySerTrpHisLeuAsnSerThrAlaLeuAsnCysAsnAsp
 241 CAGCTGATCAACACACGAGGAGTTGGCACCTCAATAGCACGGCCCTGAAGTCAATGAT
 GTCGACTAGTTGTGGTTCGCCGTCAACCGTGAGTTATCGTGCCGGGACTTGACGTTACTA
 SerLeuAsnThrGlyTrpLeuAlaGlyLeuPheTyrHisHisLysPheAsnSerSerGly
 301 AGCCTCAACACCGGCTGTGGCAGGCTTTCTATCAACCAAGTTCAACTCTTCAGGC
 TCGGAGTTGTGGCCGACCAACCGTCCCGAAAGATAGTGGTGTCAAGTTGAGAAAGTCCG
 -----Overlap with 26j-----
 -----Overlap with K9-1-----
 CysProGluArgLeuAlaSerCysArgPro
 361 TGTCTGAGAGGCTAGCCAGCTGCCGACCCC
 ACAGGACTCTCCGATCGGTGACGGCTGGGG

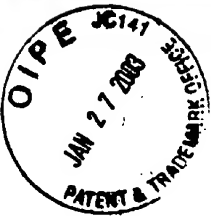




FIG. 51

GlnGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArgMetAlaTrpAsp
1CGCAAGGTGCAATTGCTCTATCTATCCCGCCATATAACGGGTACCGCATGGCATGGG
GCGTCCCAACGTTAACGAGATAGATAGGCGCGGTATATTGCCAGTGCGGTACCGTACCC

MetMetMetAsnTrpSerProThrAlaLeuValMetAlaGlnLeuLeuArgIlePro
61ATATGATGATGAACCTGGTCCCTACGACGGCGTTGGTAATGGCTCAGCTGCTCCGGATCC
TATACTACTACTTGACCAAGGGATGCTGCCGCAACCATTACCGAGTCGACGAGCCCTAGG

GlnAlaIleLeuAspMetIleAlaGlyAlaHisTrpGlyValLeuAlaGlyIleAlaTyr
121CACAAAGCCATCTTGACATGATCGCTGGTGCTCACTGGGAGTCCTGGCGGCATAGCGT
GTGTTCCGGTAGAACCTGTACTAGCGACCAAGTAGTACCCCTCAGGACCGCCCGTATCGCA

-----Overlap with CA59a-----
PheSerMetValGlyAsnTrpAlaLysValLeuValValLeuLeuPheAlaGlyVal
181ATTCTCCATGGTGGGAACTGGGCGAAGTCCTGGTAGTGCTGCTATTGCCCCGGC
TAAAGAGGTACCAACCCCTTGACCCGCTTCCAGGACCATCACGACGATAAACGGCCGC

AspAlaGluThrHisValThrGly
241TCGACGCGGAAACCCACGTCACCGGGG
AGCTGCGCCCTTTGGGTGCAGTGGCCCC

FIG. 52

CysTrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThrGln
1 GTGTGGGTGGCGATGACCCCTACGGTGCCACCAAGGATGCCAACTCCCGCAGCCA
CACACCCACCCTACTGGGATGCCACCGGTGTCCTACCGTTTGAGGGCGCTGCGT

LeuArgArgHisIleAspLeuValGlySerAlaThrLeuCysSerAlaLeuTyrVal
61 GCTTCGACGTCACATCGATCTGCTTGCGGAGCGCCACCTCTGTTGCGCCCTACGT
CGAAGCTGCAGTGTAGCTAGACGAACAGCCCTCGCGGTGGAGACAAGCCGGAGATGCA

GlyAspLeuCysGlySerValPheLeuValGlyGlnLeuPheThrPheSerProArgArg
121 GGGGACCTATGCGGGTCTGCTTCTTGTCGGCCAACGTTCACCTTCTCCAGCG
CCCCCTGGATACGCCCAAGACAGAAAGAACAGCCGGTTGACCAAGTGGAAGAGAGGTTCCG

HisTrpThrThrGlnGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArg
181 CCACGTGACGACGCAAGGTGCAATTGCTCTATCTATCCCGCCATATAACGGGTACCG
GGTGACCTGCTGCGTTCCAAACGTTAACGAGATAGTAGGGCCGCTATATTGCCACGTGCC

-----Overlap with CA84a-----
MetAlaTrpAspMetMetMetAsnTrpSerProThrThrAlaLeuValValAlaGlnLeu
241 CATGGCATGGGATATGATGATGAACCTGTCCTACGACGCGGTGGTAGTGCTCAGCT
GTACCGTACCTATACTACTTGAACCAAGGGATGCTGCCGCAACCATCACCAGAGTCGA

LeuArgIleProGlnAla
301 GCTCCGATCCACAGCC
CGAGGCCTAGGGTGTTCGG

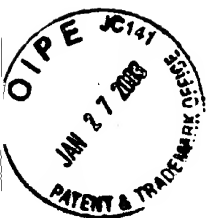


FIG. 53

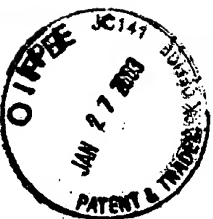
SerThrGlyLeuTyrHisValThrAsnAspCysProAsnSerSerIleValTyrGluAla
1CTCCACGGGGCTTTACCACGCTCACCAATGATGCCCTAAGTATGTTGTACGAGGC
GAGGTGCCCCGAAATGGTGCAAGTGGTTACTAACGGGATTGAGCTCATACACATGCTCCG

AlaAspAlaIleLeuHisThrProGlyCysValProCysValArgGluGlyAsnAlaSer
61GGCCGATGCCATCCTGCACACTCCGGGGTGCGTCCCTTGCGTTGAGGGCAACGCTC
CCGGCTACGGTAGGACGTGTGAGGCCCCACGCAAGGAACCAAGCACTCCCGTTGCCGAG

ArgCysTrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThr
121GAGGTGTGGGGTGCGGATGACCCCTACGGTGCCACCAAGGATGGCAAACTCCCGCGAC
CTCCACAACCCACCGCTACTGGGGATGCCACCGGTGTTCCCTACCCTTGAGGGGGCTG

-----Overlap with CA156-----
GlnLeuArgArgHisIleAspLeuLeuValGlySerAlaThrLeuCysSerAlaLeuTyr
181GCAGCTTCGACGTCACATCGATCTGCTTGTGGGAGCGCTACCCCTCTGTTGGCCCTTA
CGTCGAAGCTGCAGTGTAGCTAGACGAACAGCCCTCGGATGGGAGACAAAGCCGGAGAT

ValGlyAspLeuCysGlySerValPheLeu
241CGTGGGGGACTGTGCGGGTCTGTTCTTG
GCACCCCTGAACACGCCCAAGACAGAAGAAC



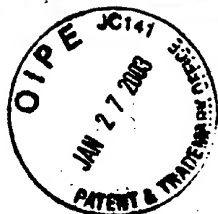


FIG. 54A

ArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCysGlyPheAlaAspLeuMet
1 AGGTCGCGCAATTTGGGTAAGGTCATCGATACCCTTACGTGCGGCTTCGCCGACCTCATG
TCCAGCGCGTTAAACCCATTCCAGTAGCTATGGGAATGCACGCCGAAGCGGCTGGAGTAC

GlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAlaArgAlaLeuAlaHisGly
61 GGGTACATACCGCTCGTCGGCGCCCTCTTGGAGGCGCTGCCAGGGCCCTGGCGCATGGC
CCCATGTATGGCGAGCAGCCGCGGGGAGAACCTCCGCGACGGTCCCGGGACCGCGTACCG

ValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsnLeuProGlyCysSerPhe
121 GTCCGGGTTCTGGAAGACGGCGTGAACATGCAACAGGGAACCTTCCTGGTTGCTCTTTT
CAGGCCCAAGACCTTCTGCCGCACTTGATACGTTGTCCCTTGAAGGACCAACGAGAAAG

SerIlePheLeuLeuAlaLeuLeuSerCysLeuThrValProAlaSerAlaTyrGlnVal
181 TCTATCTTCTTCTTGGCCCTGCTCTTGTGCTTGACTGTGCCCGCTTCGGCCTACCAAGTG
AGATAGAAGGAAGACCGGGACGAGAGAACGAACTGACACGGGCGAAGCCGGATGGTTCAC

ArgAsnSerThrGlyLeuTyrHisValThrAsnAspCysProAsnSerSerIleValTyr
241 CGCAACTCCACGGGGCTTTACCACGTCACCAATGATTGCCCTAACTCGAGTATTGTGTAC
GCGTTGAGGTGCCCGGAAATGGTGCAGTGGTTACTAACGGGATTGAGCTCATAACACATG

GluAlaAlaAspAlaIleLeuHisThrProGlyCysValProCysValArgGluGlyAsn
301 GAGGCGGCGGATGCCATCCTGCACACTCCGGGGTGCGTCCCTTGCGTTGCTGAGGGCAAC
CTCCGCCGGCTACGGTAGGACGTGTGAGGCCCCACGCAAGGGAACGCAAGCACTCCCGTTG

AlaSerArgCysTrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuPro
361 GCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCCCC
CGGAGCTCCACAACCCACCGCTACTGGGGATGCCACCGGTGGTCCCTACCGTTTGAGGGG

AlaThrGlnLeuArgArgHisIleAspLeuLeuValGlySerAlaThrLeuCysSerAla
421 GCGACGCAGCTTCGACGTCACATCGATCTGCTTGTGCGGAGCGCCACCCTCTGTTGCGCC
CGCTGCGTCGAAGCTGCAGTGTAGCTAGACGAACAGCCCTCGCGGTGGGAGACAAGCCGG

LeuTyrValGlyAspLeuCysGlySerValPheLeuValGlyGlnLeuPheThrPheSer
481 CTCTACGTGGGGGACCTATGCGGGTCTGTCTTTCTTGTGCGGCAACTGTTACCTTCTCT
GAGATGCACCCCTGGATACGCCAGACAGAAAGAACAGCCGGTTGACAAGTGGAAGAGA

ProArgArgHisTrpThrThrGlnGlyCysAsnCysSerIleTyrProGlyHisIleThr
541 CCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCGGCCATATAACG
GGGTCCGCGGTGACCTGCTCCGTTCCAACGTTAACGAGATAGATAGGGCCGGTATATTGC

GlyHisArgMetAlaTrpAspMetMetMetAsnTrpSerProThrThrAlaLeuValMet
601 GGTCAACGCGATGGCATGGGATATGATGATGAAGTGGTCCCCTACGACGGCGTTGGTAATG
CCAGTGGCGTACCGTACCCTATACTACTTGTACAGGGGATGCTGCCGCAACCATTAC

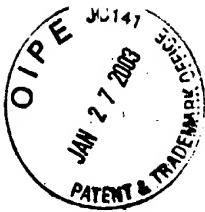


FIG. 54B

AlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIleAlaGlyAlaHisTrpGly
661 GCTCAGCTGCTCCGGATCCCACAAGCCATCTTGGACATGATCGCTGGTGGTCACTGGGGA
CGAGTCGACGAGGCCAGGGTGTTCGGTAGAACCTGTACTAGCGACCACGAGTGACCCCT

ValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrpAlaLysValLeuValVal
721 GTCCTGGCGGGCATAGCGTATTTCTCCATGGTGGGGAAGTGGGCGAAGGTCCTGGTAGTG
CAGGACCGCCGATCGCATAAAGAGGTACCACCCCTTGACCCGCTTCAGGACCATCAC

LeuLeuLeuPheAlaGlyValAspAlaGluThrHisValThrGlyGlySerAlaGlyHis
781 CTGCTGCTATTTGCCGGCGTCGACGCGGAAACCCACGTACCGGGGGAAGTGGCGGCAC
GACGACGATAAACGGCCGACGCTGCGCCTTTGGGTGCAGTGGCCCCCTTCAGGGCGGTG

ThrValSerGlyPheValSerLeuLeuAlaProGlyAlaLysGlnAsnValGlnLeuIle
841 ACTGTGTCTGGATTTGTAGCCTCCTCGCACCAGGCGCCAAAGCAGAAGTCCAGCTGATC
TGACACAGACCTAAACAATCGAGGAGCGTGGTCCGCGGTTCTGCTTGCAGGTCGACTAG

AsnThrAsnGlySerTrpHisLeuAsnSerThrAlaLeuAsnCysAsnAspSerLeuAsn
901 AACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAAGTCAATGATAGCTCAAC
TTGTGGTTGCCGTCACCGTGGAGTTATCGTGCCGGGACTTGACGTTACTATCGGAGTTG

ThrGlyTrpLeuAlaGlyLeuPheTyrHisHisLysPheAsnSerSerGlyCysProGlu
961 ACCGGCTGGTTGGCAGGGCTTTTCTATCACCACAAGTTCAACTCTTCAGGCTGTCTGAG
TGGCCGACCAACCGTCCCGAAAAGATAGTGGTGTCAAGTTGAGAAGTCCGACAGGACTC

ArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTyr
1021 AGGCTAGCCAGCTGCCGACCCCTTACCGATTTTGACCAGGGCTGGGGCCCTATCAGTTAT
TCCGATCGGTCGACGGCTGGGGAATGGCTAAAGTGGTCCCGACCCCGGATAGTCAATA

AlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrProProLysProCys
1081 GCCAACGGAAGCGGGCCCGACGAGCGCCCTACTGCTGGCACTACCCCCAAAACCTTGC
CGTTGCCTTCGCCGGGGCTGGTGCGGGGATGACGACCGTGATGGGGGGTTTGGAAAG

GlyIleValProAlaLysSerValCysGlyProValTyrCysPheThrProSerProVal
1141 GGTATTGTGCCCGCAAGAGTGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCGTG
CCATAACACGGGCGCTTCTCACACACACAGGCCATATAACGAAGTGAGGGTCGGGGCAC

ValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGlyGluAsnAspThr
1201 GTGGTGGGAACGACCGACAGGTCGGGCGCGCCACCTACAGCTGGGGTGAAAATGATACG
CACCACCTTGCTGGCTGTCCAGCCGCGCGGGTGGATGTCGACCCCACTTTTACTATGC

AspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPheGlyCysThrTrp
1261 GACGTCTTCGTCTTAACAATACAGGCCACCGCTGGGCAATTGGTTGCGTTGTACCTGG
CTGCAGAAGCAGGAATTGTATGGTCCGGTGGCGACCCGTTAACCAAGCCAACATGGACC

MetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysValIleGlyGlyAla
1321 ATGAAGTCAAGTGGATTACCAAAGTGTGGGAGCGCCTCTTGTGTATCGGAGGGGCG
TACTTGAGTTGACCTAAGTGGTTTACACGCTCGCGGAGGAACACAGTAGCCTCCCCGC

GlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisProAspAlaThrTyr
1381 GGCAACAACACCCTGCACTGCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATAC
CCGTTGTTGTGGGACGTGACGGGGTACTAACGAAGGCGTTCTAGGCCCTGCGGTGTATG

SerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAspTyrProTyrArg
1441 TCTCGGTGC66CTCCGGTCCCTGGATCACACCAAGGTGCCTGGTCACTACCCGTATAGG
AGAGCCACGCCAGGCCAGGGACCTAGTGTGGGTCCACGGACCACTGATGGGCATATCC

LeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArgMetTyrValGly
1501 CTTTGGCATTATCCTTGTACCACTACACCATATTTAAATCAGGATGTACGTGGGA
GAAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAATTTAGTCTACATGACCCCT

GlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGluArgCysAspLeu
1561 GGGGTGGAACACAGGCTGGAAGCTGCCTGCAACTGGACGCGGGGCGAACGTTGCGATCTG
CCCCAGCTTGTGTCCGACCTTCAGCGGACGTTGACCTGCGCCCCGCTTGCAACGCTAGAC

GluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThrThrGlnTrpGlnVal
1621 GAAGACAGGGACAGGTCCGAGCTCAGCCCGTTACTGCTGACCACTACACAGTGCCAGGTC
CTTCTGTCCCTGTCCAGGCTCGAGTCGGGCAATGACGACTGGTGATGTGTACCGTCCAG

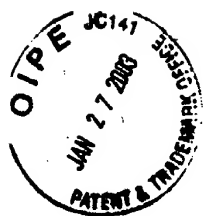


FIG. 54C

LeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIleHisLeuHisGln
1681 CTCCCGTGTTCCTTCAACCCCTACCAGCCTTGCCACCGGCCTCATCCACCTCCACCAG
GAGGGCACAAGGAAGTGTGGGATGGTGGGAACAGGTGGCCGGAGTAGGTGGAGGTGGTC

AsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAlaSerTrpAlaIle
1741 AACATTGTGGACGTGCAGTACTTGTACGGGGTGGGGTCAAGCATCGCGTCTGGGCCATT
TTGTAACACCTGCACGTGATGAACATGCCCCACCCAGTTCGTAGCGCAGGACCCGGTAA

LysTrpGluTyrValValLeuLeuPheLeuLeuAlaAspAlaArgValCysSerCys
1801 AAGTGGGAGTACGTGTTCTCCTGTTCTCTGCTTGCAGACGCGCGCTGCTCTCTGCTG
TTCACCCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCGCAGACGAGGACG

LeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeu
1861 TTGTGGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGAACCTCGTAATACTT
AACACCTACTACGATGAGTATAGGGTTCGCTCCGCCGAAACCTCTTGGAGCATTATGAA

AsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPhe
1921 AATGCAGCATCCCTGGCCGGGACGCACGGTCTTGATCCTTCCTCGTGTCTTCTGCTTT
TTACGTCGTAGGGACCGGCCCTGCGTCCAGAACATAGGAAGGAGCACAAGAACGAGAA

AlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrp
1981 GCATGGTATTTGAAGGGTAAGTGGGTGCCCGGAGCGGTCTACACCTTCTACGGGATGTGG
CGTACCATAAACTTCCCATTCACCCACGGGCTCGCCAGATGTGGAAGATGCCCTACACC

ProLeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluVal
2041 CCTCTCCTCCTGCTCCTGTTGGCGTTGCCAGCGGGCGTACGCGCTGGACACGGAGGTG
GGAGAGGAGGACGAGGACAACCGCAACGGGGTCCGCCGATGCGCGACCTGTGCCCTCAC

AlaAlaSerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyr
2101 GCCGCGTCGTGTGGCGGTGTTGTTCTCGTGGGTTGATGGCGCTGACTCTGTACCATAT
CGGCGCAGCACACCGCCACAACAAGAGCAGCCCACTACCGCGACTGAGACAGTGGTATA

TyrLysArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGlu
2161 TACAAGCGCTATATCAGCTGGTGTGTGGTGGCTTCAGTATTTCTGACCAGAGTGGAA
ATGTTTCGCGATATAGTCGACCACGAACACCACCGAAGTCATAAAAGACTGGTCTCACCTT

AlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIle
2221 GCGCAACTGCACGTGTGGATTCCCCCTCAACGTCCGAGGGGGGCGCGACGCGCTCATC
CGCGTTGACGTGCACACCTAAGGGGGGAGTTGCAGGCTCCCCCGCGCTGCGGCAGTAG

LeuLeuMetCysAlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAla
2281 TTACTCATGTGTGCTGTACACCGACTCTGGTATTTGACATCACCAAATTGCTGCTGGCC
AATGAGTACACACGACATGTGGGCTGAGACCATAAACTGTAGTGTTTAACGACGACCGG

ValPheGlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArg
2341 GTCTTCGGACCCCTTTGGATTCTTCAAGCCAGTTTGCTTAAAGTACCCTACTTTGTGCGC
CAGAAGCCTGGGGAACCTAAGAAGTTCGGTCAAACGAATTTTCATGGGATGAAACACGCG

ValGlnGlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrVal
2401 GTCCAAGGCCTTCTCCGTTCTGCGGTTAGCGCGGAAGATGATCGGAGGCCATTACGTG
CAGGTTCCGGAAGAGGCCAAGACGCGCAATCGCGCTTCTACTAGCCTCCGGTAATGCAC

GlnMetValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThr
2461 CAAATGGTCATCATTAAAGTTAGGGGCGCTTACTGACCATGTTTATAACCATCTCACT
GTTTACCAGTAGTAATTCATCCCGCGAATGACCGTGGATACAAATATTGGTAGAGTGA

ProLeuArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProVal
2521 CCTCTTCGGGACTGGGCGCACAACCGCTTGGAGATCTGGCCGTGGCTGTAGAGCCAGTC
GGAGAAGCCCTGACCCGCGTGTGGCGAACGCTCTAGACCGGACCGACATCTCGGTGAG

ValPheSerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGly
2581 GTCTTCTCCAAATGGAGACCAAGCTCATACGTGGGGGGCAGATACCGCCGCGTGGCGT
CAGAAGAGGGTTTACCTCTGGTTCGAGTAGTGCACCCCGCTCTATGGCGGCGCAGCGCA

AspIleIleAsnGlyLeuProValSerAlaArgArgGlyArgGluIleLeuLeuGlyPro
2641 GACATCATCAACGGCTTGCCTGTTTCCGCCGCGAGGGGCGGAGATACTGCTCGGGCCA
CTGTAGTAGTTGCCGAACGGACAAGGGCGGCGTCCCCGGCCCTCTATGACGAGCCCGGT



FIG. 54D

2701 AlaAspGlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGln
GCCGATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCCAG
CGGCTACCTTACCAGAGGTTCCCCACCTCCAACGACCGCGGGTAGTGCCGCATGCGGGTC

2761 GlnThrArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGln
CAGACAAGGGGCTCCTAGGGTGCATAATCACCAGCCTAACTGGCCGGGACAAAAACCAA
GTCTGTTCCCCGGAGGATCCCACGTATTAGTGGTCGGATTGACCGGCCCTGTTTTTGGTT

2821 ValGluGlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIle
GTGGAGGGTGAGGTCCAGATTGTGTCAACTGCTGCCCAAACCTTCCTGGCAACGTGCATC
CACCTCCCACTCCAGGTCTAACACAGTTGACGACGGGTTTGGAAAGACCGTTGCACGTAG

2881 AsnGlyValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLys
AATGGGGTGTGCTGGACTGTCTACCAGGGGGCGGAACGAGGACCATCGCGTCACCCAAG
TTACCCACACGACCTGACAGATGGTGCCCGGCCCTTGCTCCTGGTAGCGCAGTGGGTTT

2941 GlyProValIleGlnMetTyrThrAsnValAspGlnAspLeuValGlyTrpProAlaPro
GGTCTGTCTATCCAGATGTATACCAATGTAGACCAAGACCTTGTTGGGCTGGCCCGCTCCG
CCAGGACAGTAGGTTACATATGTTACATCTGGTTCTGGAACACCCGACCGGGCGAGGC

3001 GlnGlySerArgSerLeuThrProCysThrCysGlySerSerAspLeuTyrLeuValThr
CAAGGTAGCCGCTCATTGACACCCTGCACTTGCGGCTCCTCGGACCTTTACCTGGTCACG
GTTCCATCGGCGAGTAACTGTGGGACGTGAACGCCGAGGAGCCTGGAATGGACCAAGTC

3061 ArgHisAlaAspValIleProValArgArgArgGlyAspSerArgGlySerLeuLeuSer
AGGCACGCCGATGTCTATCCCGTGCGCCGGCGGGGTGATAGCAGGGGCGAGCTGTGTCTG
TCCGTGCGGCTACAGTAAGGGGACGCGGCCGCCCCACTATCGTCCCCGTGCGACGACAGC

3121 ProArgProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGly
CCCCGGCCATTTCTACTTGAAAGGCTCCTCGGGGGGTCCGCTGTTGTGCCCGCGGGG
GGGGCCGGGTAAAGGATGAACCTTCCGAGGAGCCCCCAGGCGACAACAGGGGCGCCCC

3181 HisAlaValGlyIlePheArgAlaAlaValCysThrArgGlyValAlaLysAlaValAsp
CACGCCGTGGGCATATTTAGGGCGCGGTGTGCACCCGTGGAGTGGCTAAGGCGGTGGAC
GTGCGGCACCCGTATAAATCCGGGCGCCACACGTGGGCACCTACCGATTCCGCCACCTG

3241 PheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThrAspAsnSer
TTTATCCCTGTGGAGAACCCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTCC
AAATAGGGACACCTCTTGATCTCTGTTGGTACTCCAGGGGCCACAAGTGCTATTGAGG

3301 SerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaProThrGlySer
TCTCCACCAAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCACAGGCAGC
AGAGGTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTCG

3361 GlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeu
GGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTC
CCGTTTTCTGTTGTTCCAGGGCCGACGTATACGTGAGTCCCGATATTCCACGATCATGAG

3421 AsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIle
AACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGATC
TTGGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTAG

3481 AspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSer
GATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTACTCC
CTAGGATTGTAGTCTGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGATGAGG

3541 ThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIle
ACCTACGGCAAGTTCTTGCCGACGGCGGGGTGCTCGGGGGGCGCTTATGACATAATAATT
TGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCAATACTGTATTATTAA

3601 CysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAsp
TGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATCGGCACTGTCTTGAC
ACACTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAGCCGTGACAGGAAGTC

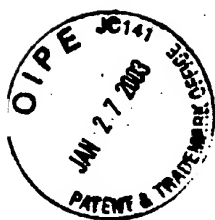


FIG. 54E

3661 GlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySer
CAAGCAGAGACTGCGGGGGCGAGACTG6TTGTGCTCGCCACCGCCACCCCTCCGGGCTCC
GTTCTGTCTCTGACGCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCGAGG

3721 ValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIlePro
GTCACTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCCT
CAGTGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCTCTCTAGGGA

3781 PheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCys
TTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTTCTGT
AAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCTCTGTAGAGTAGAAGACA

3841 HisSerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAla
CATTCAAAGAAGAAGTGCGACGAACCTCGCCGCAAAGCTGGTCGCATTGGGCATCAATGCC
GTAAGTTTCTTCTTACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCGTAGTTACGG

3901 ValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValVal
GTGGCCTACTACCGCGGTCTTGACGTGTCCGTCTATCCGACCAGCGGCGATGTTGTCTGT
CACCGGATGATGGCGCCAGAAGTGCACAGGCAAGTAGGGCTGGTCCGCGCTACAACAGCAG

3961 ValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCys
GTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGC
CACCGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACG

4021 AsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThr
AATACGTGTGTACCCAGACAGTCGATTTACGCTTGACCCTACCTTACCATTGAGACA
TTATGCACACAGTGGGTCTGTCAAGTAAAGTCGGAAGTGGGATGGAAGTGGTAACCTGT

4081 IleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGly
ATCACGCTCCCCAGGATGCTGTCTCCGCACTCAACGTGCGGGGAGGACTGGCAGGGGG
TAGTGCGAGGGGGTCTACGACAGAGGGCGTGAGTTGACGCCCGTCTGACCGTCCCC

4141 LysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSer
AAGCCAGGCATCTACAGATTTGTGGCACCAGGGGGAGCGCCCTCCGGCTGTTCCGACTCG
TTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGAGGCGGTACAAGCTGAGC

4201 SerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGlu
TCCGTCTCTGTGAGTGCTATGACGAGGCTGTGCTTGGTATGAGCTCACGCCCGGAG
AGGAGGAGACACTACGATACTGCGTCCGACACGAACATACTCGAGTGCGGGCGGCTC

4261 ThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHis
ACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCGCTGTGCCAGGACCAT
TGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACAGGTCTCTGTA

4321 LeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSer
CTTGAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCACTTTCTATCC
GAACTTAAACCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAAGATAGG

4381 GlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCys
CAGACAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTGC
GTCTGTTTCTCTCACCCCTCTTGAAGGAATGGACCATCGCATGGTTCGGTGGCACACG

4441 AlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeu
GCTAGGGCTCAAGCCCCTCCCCATCGTGGGACCAAGATGTGGAAGTGTGTTGATTGCGCTC
CGATCCCGAGTTCGGGGAGGGGGTAGCACCTGGTCTACACCTTCAAACTAAGCGGAG

4501 LysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGlu
AAGCCACCTCCATGGGCGCAACCCCTGCTATACAGACTGGGCGCTGTTGAGAAATGAA
TTCGGGTGGGAGGTACCGGTTGTGGGGACGATATGCTGACCCGCGACAAGTCTTACTT

4561 IleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGlu
ATCACCTGACGCAACCGAGTACCAAAATACATCATGACATGATGTGCGCCGACCTGGAG
TAGTGGGACTGCGTGGGTAGTGGTTTATGTAGTACTGTACGTACAGCCGGCTGGACCTC

4621 ValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCys
GTCGTACGAGCACCTGGGTGCTCGTTGGCGGCGTCTGGCTGCTTTGGCGCGTATTGC
CAGCAGTGCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACCGGCGCATAACG

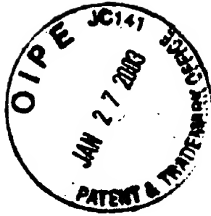


FIG. 54F

LeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIle
4681 CTGTCAACAGGCTGCGTGGTCATAGTGGGACAGGCTCGTCTTGTCCGGGAAGCCGGCAATC
GACAGTTGTCCGACGCACCAAGTATCACCCGTCCAGCAGAACAGGCCCTTCGGCCGTTAG

IleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHis
4741 ATACCTGACAGGGAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCAC
TATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCAGGAGAGTCGTG

LeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGly
4801 TTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGGC
AATGGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCCGGGAGCCG

LeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAspTrp
4861 CTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAGACCAACTGG
GAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACC

GlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPhelIleSerGlyIleGlnTyr
4921 CAAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATAC
GTTTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCCATGTTATG

LeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThr
4981 TTGGCGGGCTTGTCACCGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTACA
AACCGCCCGAACAGTTGCGACGGACCATTTGGGGCGGTAACGAAGTAACACGAAAATGT

AlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGly
5041 GCTGCTGTCAACAGCCCACTAACCCTAGCCAAACCTCCTCTTCAACATATTGGGGGGG
CGACGACAGTGGTGGGTGATTGGTGATCGGTTGGGAGGAGAAGTTGTATAACCCCCC

TrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeu
5101 TGGGTGGCTGCCAGCTCGCCGCCCGGTCGCGCTACTGCCCTTGTGGGCGCTGGCTTA
ACCCACCGACGGGTCGAGCGGGCGGGGCCACGGCGATGACGGAACACCCGCGACCGAAT

AlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGly
5161 GCTGGCGCCGCCATCGGCAGTGTGGACTGGGGAAGGTCTCATAGACATCCTTGCAGGG
CGACCGCGGGGTAGCCGTCAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCC

TyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValPro
5221 TATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCC
ATACCGCGCCCGACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCATCCAGGGG

SerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValVal
5281 TCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGTC
AGGTGCCTCCTGGACCACTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGGAGCATCAG

GlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGln
5341 GGCCTGGTCTGTGCAGCAATACTGCGCCGGCAGCTTGGCCCGGGCGAGGGGGCAGTGCAG
CCGACCAAGACAGTCTCGTTATGACGCGGCCGTGCAACCGGGCCCGCTCCCCGTCACGTC

TrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyr
5401 TGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGAACCATGTTTTCCCCACGCACTAC
ACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGGTGATG

ValProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThr
5461 GTGCCGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAACC
CACGGCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGTGGAGTGACATTGG

GlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGly
5521 CAGCTCCTGAGGCGACTGCACCACTGGATAAGCTCGGAAGTGTACCACTCCATGCTCCGGT
GTCGAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGTGAGGTACGAGGCCA

SerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrp
5581 TCCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGG
AGGACCGATTCCCTGTAGACCTGACCTATACGCTCCACAACCTCGCTGAAATTCTGGACC

LeuLysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGly
5641 CTAAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCTTTGTGTCTGCCAGCGCGGG
GATTTTCGATTGAGTACGGTGTGACGGACCTAGGGGAAACACAGGACGGTGGCGCCC



FIG. 54G

5701 TyrLysGlyValTrpArgValAspGlyIleMethHisThrArgCysHisCysGlyAlaGlu
TATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAG
ATATTCCTCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACTC

5761 IleThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsn
ATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCTAGGACCTGCAGGAAC
TAGTGACCTGTACAGTTTTTGCCTGCTACTCTAGCAGCCAGGATCCTGGACGTCTTG

5821 MetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuPro
ATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCTGTACCCCCCTTCCT
TACACCTCACCTGGAAGGGGTAATTACGGATGTGGTGCCCGGGACATGGGGGAAGGA

5881 AlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArg
GCGCCGAACCTACACGTTCCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAGG
CGCGGCTTGATGTGCAAGCGCATACCTCCACAGACGTCTCTTATACACCTCTATTCC

5941 GlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCys
CAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCGTCTC
GTCCACCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAGAGTTTACGGGCACG

6001 GlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAla
CAGGTCCCATCGCCGAATTTTTACAGAATTGGACGGGGTGCCTACATAGGTTTGGC
GTCCAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAAACGC

6061 ProProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyr
CCCCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTACAGAGTAGGACTCCACGAATAC
GGGGGGACGTTGCGGAACGACGCCCTCTCCATAGTAAGTCTCATCTGAGGTGCTTATG

6121 ProValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMet
CCGGTAGGGTCGCAATTACCTTGCGAGCCGACCGGACGTGGCGTGTGACGTCCATG
GGCCATCCACGCTTAATGGAACGCTCGGGCTTGCCCTGCACCGGCACAACCTGCAGGTAC

6181 LeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySer
CTCACTGATCCCTCCATATAACAGCAGAGGCGGGCGGGCGAAGGTTGGCGAGGGGATCA
GAGTGACTAGGGAGGGTATATTGTCGTCTCCGCGGGCCGCTTCCAACCGCTCCCCTAGT

6241 ProProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThr
CCCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACT
GGGGGGAGACACCGGTGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGTTGA

6301 CysThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArg
TGCACCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCTATGGAGG
ACGTGGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCC

6361 GlnGluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAsp
CAGGAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGAC
GTCTCTACCCGCCGTTGTAGTGGTCCCAACTAGTCTTTTGTTCACCACTAAGACCTG

6421 SerPheAspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIle
TCCTTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGAGATCTCCGTACCCGCAGAAATC
AGGAAGCTAGGCGAACACCGCTCCTCTGCTCGCCCTCTAGAGGATGGGCGTCTTTAG

6481 LeuArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsn
CTGCGGAAGTCTCGGAGATTGCCCCAGGCCCTGCCGTTTGGGCGCGCCGGACTATAAC
GACGCTTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAACCCGCGCGGCTGATATTG

6541 ProProLeuValGluThrTrpLysLysProAspTyrGluProProValValHisGlyCys
CCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCACTGTGGTCCATGGCTGT
GGGGGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGACACCAAGGTACCGACA

6601 ProLeuProProProLysSerProProValProProProArgLysLysArgThrValVal
CCGCTTCCACCTCAAAGTCCCCTCCTGTGCTCCGCTCGGAAGAAGCGGACGGTGGTC
GGCGAAGGTGGAGGTTTCAGGGGAGGACACGGAGGCGGAGCCTTCTTCGCTGCCACCAAG

6661 LeuThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySer
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GAGTGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCAAAACCGTGC

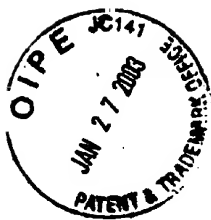


FIG. 54H

6721 SerSerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGluProAlaProSer
TCCTCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCCCCTTCT
AGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGAAGA

6781 GlyCysProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGlu
GGCTGCCCCCGACTCCGACGCTGAGTCTTCTCCATGCCCCCTGGAGGGGGAG
CCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCCCTC

6841 ProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAla
CCTGGGGATCCGATCTTAGCGACGGGTCATGGTCAACGGTCAGTAGTGAGGCAACGCG
GGACCCCTAGGCTAGAATCGCTGCCAGTACCAGTTGCCAGTCATCACTCCGGTTGCGC

6901 GluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCys
GAGGATGTCGTGCTGCTCAATGCTTACTCTTGGACAGGCGCACTCGTCACCCCGTGC
CTCCTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGCAGC

6961 AlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHis
GCCGCGGAAGAACAGAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTCAACCA
CGGCGCCTTCTTGTCTTTGACGGGTAGTTACGTGATTGCTTGAGCAACGATGCAGTGGTG

7021 AsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPhe
AATTTGGTGTATTCCACCACCTCACGCACTGCTTGCCAAAGGAGAAAGTACATTT
TTAAACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGTTCTTTCAGTGTAA

7081 AspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAla
GACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAGGTTAAAGCAGCG
CTGTCTGACGTTCAAGACCTGTGCGTAATGGTCTGCATGAGTTCTCCAATTCGTCGC

7141 AlaSerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSerLeuThrProPro
GCGTCAAAAGTGAAGGCTAAGTTGCTATCCGTAGAGGAAGCTTGCAACCTGACGCCCCCA
CGCAGTTTTCACTTCCGATTGAACGATAGGCATCTCCTCGAACGTCGGACTGCGGGGGT

7201 HisSerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLys
CACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTTCCGTTGCCATGCCAGAAAG
GTGAGTCGGTTTAGGTTCAAACCAATACCCGTTTTCTGCAGGCAACGGTACGGTCTTTC

7261 AlaValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsnValThrProIle
GCCGTAACCCACATCAACTCCGTGTGGAAGACCTTCTGGAAGACAATGTAAACCAATA
CGGCATTGGGTGAGTTGAGGCACACCTTTCTGGAAGACCTTCTGTTACATTGTGGTTAT

7321 AspThrThrIleMetAlaLysAsnGluValPheCysValGlnProGluLysGlyGlyArg
GACACTACCATCATGGCTAAGAACGAGTTTTCTGCGTTCAAGCTGAGAGGGGGGTCGT
CTGTGATGGTAGTACCGATTCTTGTCCAAAGACGCAAGTCGGACTCTTCCCCCAGCA

7381 LysProAlaArgLeuIleValPheProAspLeuGlyValArgValCysGluLysMetAla
AAGCCAGCTCGTCTCATCGTTTCCCCGATCTGGGCGTGCAGCTGTGCGAAAGATGGCT
TTCGGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACACGCTTTCTACCGA

7441 LeuTyrAspValValThrLysLeuProLeuAlaValMetGlySerSerTyrGlyPheGln
TTGTACGACGTGGTTACAAAGCTCCCTTGGCCGTGATGGGAAGCTCCTACGGATTCCAA
AACATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCCTTCGAGGATGCCTAAGGTT

7501 TyrSerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSerLysLysThrPro
TACTCACCAGGACAGCGGTTGAATTCCTCGTCAAGCGTGGAAGTCCAAGAAAACCCCA
ATGAGTGGTCTGTGCCCCAATTAAGGAGCACGTTCCACCTTCAGGTTCTTTTGGGGT

7561 MetGlyPheSerTyrAspThrArgCysPheAspSerThrValThrGluSerAspIleArg
ATGGGGTTCTCGTATGATACCGCTGCTTGAAGTCCACAGTCACTGAGAGCGACATCCGT
TACCCCAAGAGCATACTATGGGCGACGAAACTGAGGTGTCACTGACTCTCGCTGTAGGCA

7621 ThrGluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArgValAlaIleLys
ACGGAGGAGGCAATCTACCAATGTTGTACCTCGACCCCAAGCCCGGTGGCCATCAAG
TGCTCCTCCGTAGATGGTTACAACACTGGAGCTGGGGGTTTGGGCGCACCGGTAGTTC

7681 SerLeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCys
TCCCTCACCAGAGGCTTTATGTTGGGGGCCCTCTTACCAATTCAAGGGGGGAGAACTGC
AGGGAGTGGCTCTCCGAAATACAACCCCGGGAGAATGGTTAAGTTCCCCCTCTTGACG



FIG. 54I

7741 GlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThr
GGCTATCGCAGGTGCCGCGCGAGCGGCGTACTGACAAGTACTGTGGTAACACCCTCACT
CCGATAGCGTCCACGGCGCGCTCGCCGCATGACTGTTGATCGACACCATTGTGGGAGTGA

7801 CysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeu
TGCTACATCAAGGCCCGGGCAGCCTGTGAGCCGCAGGGCTCCAGGACTGCACCATGCTC
ACGATGTAGTTCGGGGCCGTCGGACAAGCTCGGCGTCCCGAGGTCCTGACGTGGTACGAG

7861 ValCysGlyAspAspLeuValValIleCysGluSerAlaGlyValGlnGluAspAlaAla
GTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGCG
CACACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCCAGGTCCTCCTGCGCCGC

7921 SerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProProGlyAspProPro
AGCCTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCCTGGGGACCCCCCA
TCGGACTCTCGGAAGTGCTCCGATACTGGTCCATGAGGCGGGGGGGACCCCTGGGGGGT

7981 GlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnValSerValAlaHis
CAACCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCCAACGTGTGAGTCGCCCAC
GTTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGTG

8041 AspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArg
GACGGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCTACAACCCCCCTCGCGAGA
CTGCCGCGACCTTCTCCAGATGATGGAGTGGGCACTGGGATGTTGGGGGGAGCGCTCT

8101 AlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMet
GCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCATG
CGACGCACCCCTCTGTCGTTCTGTGTGAGGTGAGTTAAGGACCGATCCGTTGTATTAGTAC

8161 PheAlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIle
TTTGCCCCCACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCCTTATA
AAACGGGGGTGTGACACCCGCTCTACTATGACTACTGGGTAAAGAAATCGCAGGAATAT

8221 AlaArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIle
GCCAGGGACAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCATA
CGGTCCCTGGTCGAACCTGTCCGGGAGCTAACGCTCTAGATGCCCCGGACGATGAGGTAT

8281 GluProLeuAspLeuProProIleIleGlnArgLeu
GAACCACTTGATCTACCTCCAATCATTCAAAGACTC
CTTGGTGAAGTAGATGGAGGTTAGTAAGTTTCTGAG

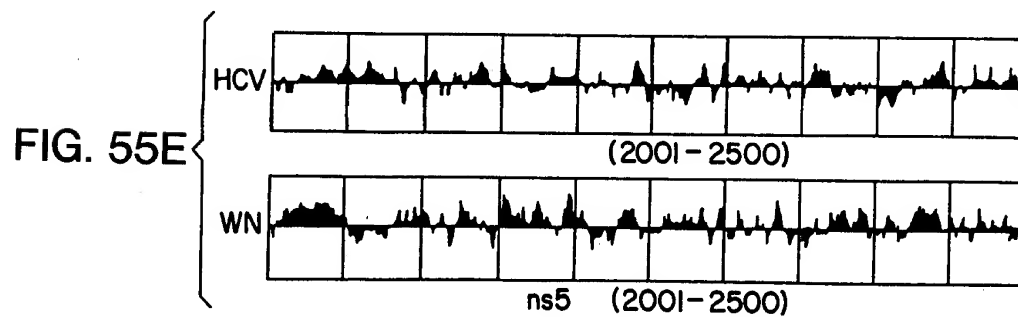
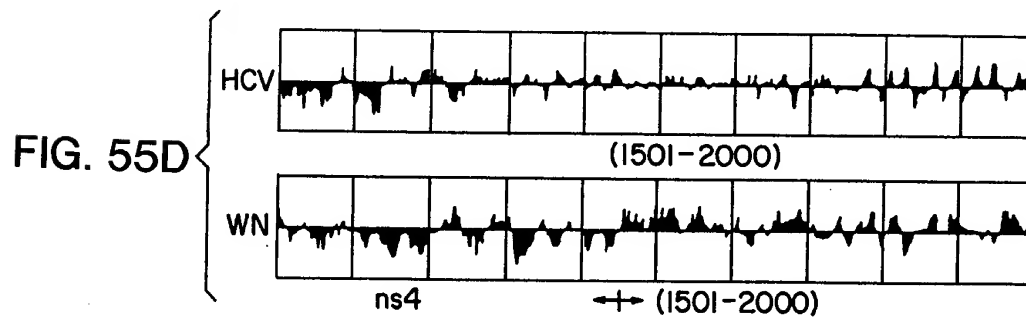
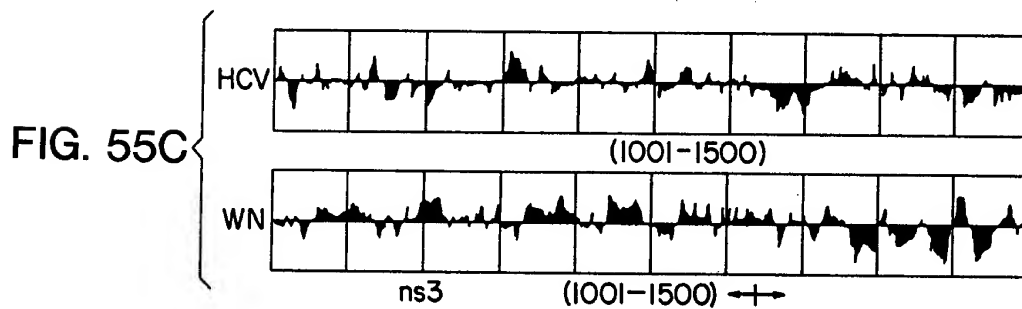
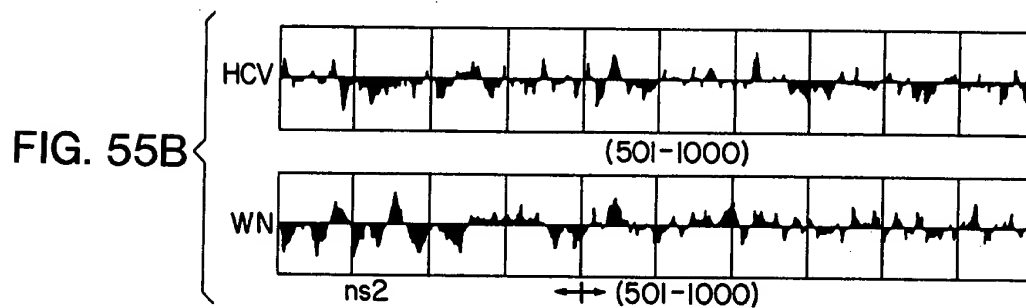
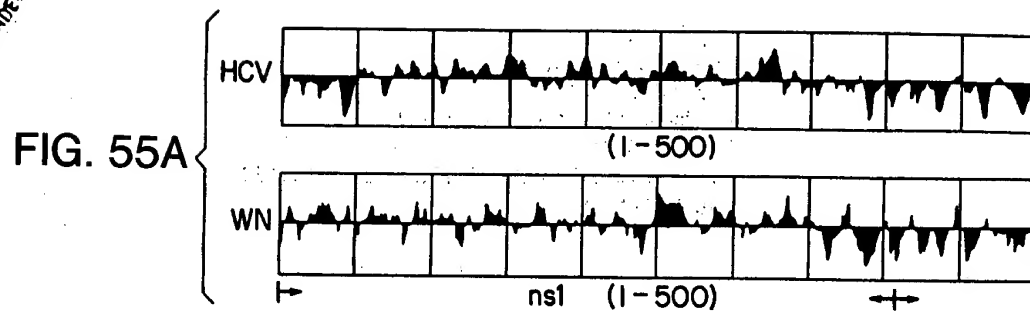
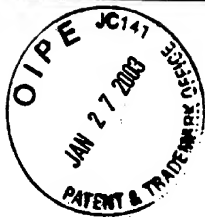




FIG. 56

ArgArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCysGlyPheAlaAsp
1 CCCGGCGTAGGTCGCGCAATTGGGTAAGGTACATACCTTACGTGCGGCTTCGCCG
GGCCGCATCCAGCGCGTTAAACCCATTCCAGTAGCTATGGGAATGCACGCCGAAGCGGC
LeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAlaArgAlaLeuAla
61 ACCTCATGGGTACATACCGCTCGTCGGCGCCCTCTTGGAGCGCTGCCAGGCCCTGG
TGGAGTACCCCATGTATGGCGAGCAGCCGCGGGAGAACCTCCGCGACGGTCCCGGACC
HisGlyValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsnLeuProGlyCys
121 CGCATGGCGTCCGGTCTTGGAAGACGGCGTGAACATATGCAACAGGAACCTTCCTGGTT
GCGTACCGCAGGCCCAAGACCTTCTGCCGCACTGATACGTTGTCTCCCTTGGAGGACCAA
SerPheSerIlePheLeuLeuAlaLeuLeuSerCysLeuThrValProAlaSerAlaTyr
181 GCTCTTCTCTATCTTCTTGGCCCTGCTCTCTTGTGACTGTGCCCGCTTCGGCCT
CGAGAAAGAGATAGAGGAAGACCGGACGAGAGAACGAACCTGACACGGCGGAGCCGGA

GlnValArgAsnSerThrGlyLeuTyrHisValThrAsnAspCysProAsnSerSerIle
241 ACCAAGTGCACAACCTCCACGGGCTTTACCACGTCACCAATGATTGCCCTAACCTCGAGTA
TGGTTCACGCGTTGAGGTGCCCCGAAATGGTGCACTGGTTACTAACGGGATTGAGCTCAT
-----overlap with CA167b-----
ValTyrGluAlaAlaAspAlaIleLeuHisThrProGlyCysValProCysValArgGlu
301 TTGTGTACGAAGCGCGATGCCATCCTGCACACACTCCGGGGTGGTCCCTTGCGTTCTGTG
AACACATGCTTCGCCGCTACGGTAGGACGTGTGAGGCCCCCACGACGGAACGCAAGCAC

GlyAsnAlaSerArgCysTrpValAlaMetThrProThrValAla
361 AGGGCAACGCCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCC
TCCCGTTGCGGAGCTCCACAACCCACCGCTACTGGGGATGCCACCCG



LysLysAsnLysArgAsnThrAsnArgArgProGlnAspValLysPheProGlyGlyGly
1 AAAAAAAAAACGTAACACACCGTCGCCACAGGACGTCAAGTCCCGGGTGGCG
TTTTTTTTTTGTTGCAATGTGTTGGCAGCGGTGTCCTGCAGTTCAAGGCCCCACCGC
GlnIleValGlyValTyrLeuLeuProArgArgGlyProArgLeuGlyValArgAla
61 GTCAGATCGTTGGTGGAGTTACTTGTGCCGCGCAGGGCCCTAGATTGGTGTGGCG
CAGCTAGCAACCACTCAATGAACAACGGCGTCCCCGGGATCTAACCCACACGCGC
ThrArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnProIleProLysAla
121 CGACGAGAAAGACTTCCGAGCGGTGCAACCTCGAGGTAGACGCCAGCCTATCCCCAAG
GCTGCTCTTCTGAAGCTCGCCAGCTTGGAGCTCCATCTCGGTCCGATAGGGGTTC
ArgArgProGluGlyArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrGlyAsn
181 CTCGTCGGCCCCAGGAGGACCTGGGCTCAGCCCGGTACCTTGGCCCCCTCTATGGCA
GAGCAGCCGGGCTCCGTCCTGGACCCGAGTCGGGCCCATGGGAACCGGGAGATACCGT
GluGlyCysGlyTrpAlaGlyTrpLeuLeuSerProArgGlySerArgProSerTrpGly
241 ATGAGGGCTGCGGTGGCGGATGGCTCTGTCTCCCCGTGGCTCTCGGCCTAGCTGG
TACTCCCGACGCCCAACCGCCCTACCGAGGACAGAGGGCACCGAGCGCGATCGACCC

ProThrAspProArgArgArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCys
301 GCCCCACAGACCCCGCGTAGGTGCGCAATTGGGTAAGGTCAATCGATACCCCTTACGT
CGGGGTGCTGGGGCCGCATCCAGCGGTTAAACCCATTCCAGTAGCTATGGGAATGCA

GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAla
361 GCGGCTTCGCCGACCTCATGGGTACATACCGCTCGTCGGCGCCCTCTTGGAGCGCTG
CGCCGAAGCGGCTGGAGTACCCCATGTATGGCGAGCAGCGCGGGGAGAACCTCCCGGAC

ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsn
421 CCAGGGCCCTGGCGCATGGCTCCGGTTCTGGAAGACGCGGTGAACCTATGCAACAGGGA
GGTCCCCGGGACCGGTACCGCAGGCCCAAGACCTTCTGCCGCACTTGATACGTTGTCCCT

LeuProGlyCysSerPheSerThrPhe
481 ACCTTCTCTGTTGCTCTTCTCTACCTTC
TGGAAGGACCAACGAGAAAGAGATGGAAG

FIG. 57

FIG. 58A

#MetSerValValGlnProProGlyProProLeu

1 CGCAGAAAGCGTCTAGCCATGGCGTTAGTATGAGTGTCTGTCAGCCCTCCAGGACCCCCC

GCGTCTTTCCGAGATCGGTACCCGCAATCATACTCACAGCAGGTCCGAGGTCCCTGGGGGG

ProGlyGluProAM

61 TCCCGGAGAGCCATAGTGTCTGCGGAACCGGTGAGTACACCGGAATTGCCAGGACGAC
AGGGCCCTCTCGGTATCACAGACGCCCTTGCCACTCATGTGCCCTTAACGGTCCCTGCTG

#MetProGlyAspLeuGlyValProProGlnAsp

121 CGGTCCTTTCTTGGATCAACCCGCTCAATGCCCTGGAGATTGGCGTGCCCCCGCAAGA
GCCCAGGAAGAACCCTAGTTGGCGAGTTACGGACCCTTAACCCGCAACGGGGCGTTCT

CysAM

OP AM GlyAlaCys
*

181 CTGCTAGCCGAGTAGTGTGGGTCCGAAAGCCCTTGTGTTACTGCTGATAGGGTGCTT
GACGATCGGCTCATCAACCCAGCGCTTCCGGAAACCATGACGACTATCCACGAA

GluCysProGlyArgSerArgArgProCysThrMetSerThrAsnProLysProGlnLys



FIG. 58B

241

GGGAGTCCCCGGGAGGTCTCGTAGACCGTGACACCATGAGCAGCAATCCTAAACCTCAA
CGCTCAGGGGGCCCTCCAGAGCATCTGGCACGTGGTACTCGTCTTAGGATTGGAGTTT

LysAsnLysArgAsnThrAsnArgArgProGlnAspValLysPheProGlyGlyGln

301

AAAAAACAACGTAACACCAACCGTCGCCACAGACGTCAGTCCCGGGTGCGGTC
TTTTTTTGTTCATTGTGTGGCAGCGGGTGTCCTGCAGTTCAAGGCCCAACCGCCAG

IleValGlyGlyValTyrLeuLeuProArgArgGlyProArgLeuGlyValArgAlaThr

361

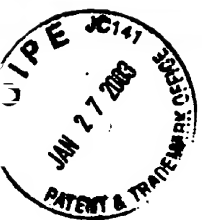
AGATCGTTGCTGAGCTTACTTGTGCGCGCAGGGGCCCTAGATTGGGTGCGCGGA
TCTAGCAACCACTCAAATGAACAACGGCGGTCCCGGGAATCAACCCACACGCGCGCT

ArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnProIleProLysAlaArg

421

CGAGAAAGACTTCCGAGCGGTCGCAACCTCGAGGTAGACGTCAGCCTATCCCCAAGGCTC
GCTCTTTCTGAAGGCTCGCCAGCGTTGAGCTCCATCTGCAGTCGGATAGGGGTTCCGAG

ArgProGluGlyArgThrTrpAlaGlnProGlyTyrProThrProLeuTyrGlyAsnGlu



481 -----overlap with CA290a-----
 GTGGCCCGAGGCGACGACCTGGCTCAGCCCGGTACCTTGCCCTATGGCAATG
 CAGCCGGGCTCCCGTCCCTGACCCGAGTCGGGCCCATGGGAACCGGGAGATACCGTTAC

GlyCysGlyTrpAlaGlyTrpLeuLeuSerProArgGlySerArgProSerTrpGlyPro

541 -----
 AGGCTGCGGGGTGGGGGATGCTCCTGTCTCCCGTGCTCTGGCCTAGCTGGGCC
 TCCCGACGCCACCCGCCCTACCGAGACAGAGGGGCACCGAGCCGGATCGACCCCGG

ThrAspProArgArgArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCysGly

601 -----
 CCACAGACCCCGCGCGTAGCTCGCGCAATTGGGTAAGCTCATGCATACCCTTACGTGG
 GGTGCTGGGGGCCCATCCAGCGCGTTAAACCATTCAGTAGCTATGGAAATGCACGC

Phe

661 -----
 GCTTC
 CGAAG

* = Start of long HCV ORF
 | = Putative first amino acid of large HCV polypeptide
 # = Putative small encoded peptides (that may play a translational regulatory role)

FIG. 58C

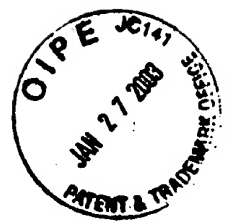


FIG. 59

1 ValLeuGIYArgGIuArgProCysGlyThraIaOP AM GlyAlaCysGluCysProGly
GTCTTGGGTCGCGAAAGCCCTTGTGTTACTGCTGATAGGGTGCTTGCAGTCCCCGGG
CAGAACCAGCGCTTCCGGAACACCATGACGGACTATCCACGAACGCTCACGGGGCCC

*

61 ArgSerARgArgProCysThrMetSerThraSnProLysProGlnArgLysThrLysArg
AGGTCTCGTAGACCGCTGCACCATGAGCACGAATCCTAAACCTCAAGAAACCAACAGT
TCCAGAGCATCTGGCACGTGGTACTCGTGCCTTAGGATTTGGAGTTCTTTTGGTTTCCA

121 AsnThrAsnArgArgProGlnAspValLysPheProGlyGlyGlyGlnIleValGlyGly
AACACCAACCGTCGCCACAGACGTCAGTTCCCGGGTGGCGGTCAGATCGTTGGTGGA
TTGTGGTTGGCAGCGGGTGTCTCTGCAGTTCAGGGGCCACCGCCAGTCTAGCAACCACT

181 ValTyrLeuLeuProArgArgGlyProArgLeuGlyValArgAlaThrArgLysThrSer
GTTTACTTGTGCCCCGCGCAGGGCCCTAGATTGGGTGTGCGCGCGACGAGAAAGACTTCC
CAAATGAACAACGGCGCGTCCCGGGGATCTAACCACACGCGCGCTCTTCTGAAGG

-----overlap with CA290a-----

241 GluArgSerGlnProArgGlyArgArgGlnProIleProLysAlaArgArgProGluGly
GAGCGGTGCAACCTCGAGGTAGACGTCAGCCTATCCCAAGGCTGTCGGCCCCGAGGGC
CTCGCCAGCGTTGGAGCTCCATCTGCAGTCGGATAGGGGTTCCGAGCAGCCGGGCTCCCG

301 ArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrGlyAsnGluGlyCys
AGGACCTGGGCTCAGCCCCGGGTACCTTGCCCCCTTATGGCAATGAGGGCTGCG
TCCTGGACCCCGAGTCGGGCCCATGGGAACCGGGGAGATACCGTTACTCCCGACGC

* = putative initiator methionine codon



FIG. 60

```

#ProProP
#SerThrMetAsnHisSerProValArgAsnTyrCysLeuHisAlaGluSerValAM
1 #LeuHisHisGluSerLeuProCysGluGluLeuLeuSerSerArgArgLysArgLeuAla
CTCCACCATGATCACTCCCTGTGAGGAATCACTGTCTTCACGCAGAAAGCGTTAGCC
GAGTGTACTTAGTGAGGGGACACTCCCTTGATGACACAGAAGTGCCTCTTCCGAGATCGG
-----
#MetSerValValGlnProProGlyProProLeuProGlyGluProAM
MetAlaLeuValOP
61 ATGGCGTTAGTATGAGTGTCTGTCAGCCCTCCAGGACCCCTCCGGGAGAGCCATAGT
TACCGCAATCATACTCACACAGCAGCTGGAGGTCTCTGGGGGAGGCCCTCTCGTATCA
-----
121 GGTCTCGGGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCTTCTTGATC
CCAGACGCCCTTGGCCACTCATGTGCCCTTAACGGTCTCTGCCCCAGAAAGAACCTAG
-----
overlap with ag30a-----
#MetProGlyAspleuGlyValProProGlnAspCysAM
181 AACCCGCTCAATGCCCTGAGATTGGCGCTGCCCGCAAGACTGCTAGCCGAGTAGTGT
TTGGCGAGTTACGGACCTCTAAACCCGACGGGGCGTTCTGACGATCGGCTCATCACA
-----
OP AM GlyAlaCysGluCysProGlyArgSer
241 TGGGTCGCGAAGGCCCTTGTGTTACTGCTGATAGGGTGTGCGAGTGCCCCGGAGGT
ACCCAGCGCTTTCGGAACACCATGACGAGCTATCCACGAACGCTCACGGGGCCCTCCA
-----
ArgArg      * = Start of long HCV ORF
CTCGTAGA    # = Putative small encoded peptides (that may
GAGCATCT    play a translational regulatory role)
301

```



FIG. 61

-----Overlap with 15e -----

1 GlyAlaCysTyrSerIleGluProLeuAspLeuProIleIleGlnArgLeuHisGly
 1 GGGCCCTGCTACTCCATAGAACCACTGGATCTACCTCCAATCATTCAAAGACTCCATGGC
 CCCCCGACGATGAGGTATCTTGGTGACCTAGATGAGGTAGTAAAGTTTCTGAGGTACCG

LeuSerAlaPheSerLeuHisSerTyrSerProGlyGluIleAsnArgValAlaAlaCys
 61 CTCAGCGCATTTTCACTCCACAGTTACTCTCCAGGTGAATTAATAGGGTGGCCGCATGC
 GAGTCGCGTAAAGTGAGGTGTCAATGAGAGGTCCACTTTAATTATCCACCGCGGTACG

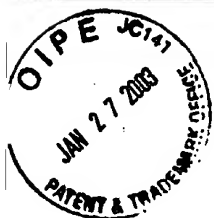
Gly*
 G

121 LeuArgLysLeuGlyValProProLeuArgAlaTrpArgHisArgAlaArgSerValArg
 121 CTCAGAAACTTGGGGTACCGCCCTTGCGAGCTTGAGACACCGGGCCCGAGCGTCCGC
 GAGTCTTTTGAAACCCCATGGCGGGAACGCTCGAACCTCTGTGGCCCGGCTCGCAGCGG

AlaArgLeuLeuAlaArgGlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrp
 181 GCTAGGCTTCTGGCCAGAGAGGCGGCTGCCATATGTGGCAAGTACCTCTTCAACTGG
 CGATCCGAAGACCGGTCTCTCCGTCCCGACGGTATACACCGTTCAATGAGAGATTGACC

AlaValArgThrLysLeuLys
 241 GCAGTAAGAACAAAGCTCAAAC
 CGTCATTTCTTGTTCGAGTTTG

* = nucleotide heterogeneity



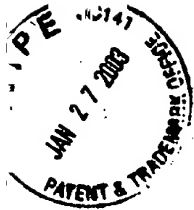


FIG. 62A

CACTCCACCATGAATCACTCCCCTGTGAGGAAGTACTGTCTTCACGCAGAAAGCGTCTAG
CCATGGCGTTAGTATGAGTGTCTGTCAGCCTCCAGGACCCCCCTCCCGGGAGAGCCATA
GTGGTCTGCGGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCTTTCTTGGGA
TCAACCCGCTCAATGCCTGGAGATTTGGGCGTGCCCCGCAAGACTGCTAGCCGAGTAGT
GTTGGGTCGCGAAAGGCCTTGTGGTACTGCCTGATAGGGTGCTTGCAGTGCCTCGGGAG-300

---(Putative initiator methionine codon)
GTCTCGTAGACCGTGCACCATGAGCACGAATCCTAAACCTCAAAAAAAAAACAAACGTAA
CACCAACCGTCGCCCACAGGACGTCAAGTTCCCGGGTGGCGGTGAGATCGTTGGTGGAGT
TTACTTGTGGCGCGCAGGGGCCCTAGATTGGGTGTGCGCGCAGCAGAAAGACTTCCGA
GCGGTGCGAACCTCGAGGTAGACGTACGCTATCCCCAAGGCTCGTCGGCCCGAGGGCAG
GACCTGGGCTCAGCCCGGGTACCCTTGGCCCTCTATGGCAATGAGGGTGCGGGTGGGC-600
GGGATGGCTCCTGTCTCCCCGTGGCTCTCGGCCTAGCTGGGGCCCCACAGACCCCCGGCG
TAGGTGCGCAATTTGGGTAAGGTTCATCGATACCCTTACGTGCGGCTTCGCCGACCTCAT
GGGTACATACCGCTCGTCGGCGCCCTCTTGGAGGCGCTGCCAGGGCCTGGCGCATGG
CGTCCGGGTTCTGGAAGACGGCGTGAAGTATGCAACAGGGAACCTTCTGTTGCTCTTT
CTCTATCTTCTTCTGGCCCTGCTCTTGTGCTTGAAGTGTGCGCGCTTCGGCCTACCAAGT-900
GCGCAATCCACGGGGCTTTACCACGTACCAATGATTGCCCTAACTCGAGTATTGTGTA
CGAGGCGGGCGATGCCATCTGACACTCCGGGGTGCCTCCCTTGCCTTCTGAGGGCAA
CGCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACTCCC
CGCGACGCAGCTTCGACGTACATCGATCTGCTTGTGCGGAGCGCCACCCTCTGTTCCGC
CCTTACGTGGGGGACCTATGCGGGTCTGTCTTCTTGTGCGGCAACTGTTCACTTCTC-1200
TCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCGGCATATAAC
GGGTACCGCATGGCATGGGATATGATGATGAAGTGGTCCCTACGACGGCTTGGTAA
GGCTCAGCTGCTCCGGATCCCAAGCCATCTTGGACATGATCGCTGGTGTCTACTGGGG
AGTCTTGGCGGGCATAGCGTATTTCTCATGGTGGGGAAGTGGGCGAAGGTCTGGTAGT
GCTGCTGCTATTTGCCGGCGTCGACGCGGAAACCCACGTACCGGGGGGAAGTGGCGGCCA-1500
CACTGTGTCTGGATTTGTTAGCCTCTCGCACCAGGCGCAAGCAGACGTCAGCTGAT
CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAAGTGAATGATAGCTCAA
CACC GGCTGGTTGGCAGGGCTTTTCTATCACCACAAGTTCAACTCTTCAGGCTGTCTGA
GAGGCTAGCCAGCTGCCGACCCCTTACCGATTTTGACCAAGGCTGGGGCCCTATCAGTTA
TGCCAACGGAAGCGGCCCGACGACGCCCCCTACTGCTGGCACTACCCCCAAAACCTTG-1800
CGGTATTGTGCCCGCAAGAGTGTGTGTGTTCCGGTATATTGCTTCACTCCGACCCCGT
GGTGGTGGGAACGACGACAGGTGCGGCGCGCCACCTACAGCTGGGGTGAAGATGATAC
GGACGTCTTCTGCTTAAACAATACCAGGCCACCGTGGGCAATTGGTTGGTTGTACCTG
GATGAAGTCAACTGGATTACCAAAGTGTGCGGAGCGCCTCTTGTGTCATCGGAGGGGC
GGGCAACACACCCTGCACTGCCCCACTGATTGCTCCGCAAGCATCCGGACGCCACATA-2100
CTCTCGGTGCGGCTCCGGTCCCTGGATCACACCAGGTGCTTGGTGCAGTACCCGATAG
GCTTTGGCATTATCCTTGTACCATCAACTACACCATATTTAAATCAGGATGTACGTGGG
AGGGGTGGAACACAGGCTGGAAGCTGCTGCAACTGGACGCGGGGCGAACGTTGCGATCT
GGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCACTACACAGTGGCAGGT
CCTCCGCTGTTCTTCAACACCTACCAGCCTTGTCCACCGGCCTCATCCACCTCCACCA-2400
GAACATTGTGGACGTGCAAGTCTTGTACGGGGTGGGGTCAAGCATCGCTCCTGGGCCAT
TAACTGGGAGTACGTCGTTCTCCTGTTCTTCTGCTTGCAGACGCGCGCTGCTCCTG
CTTGTGGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTGGAGAACCTCGTAATACT
TAATGCAGCATCCCTGGCCGGGACGACGGTCTTGTATCCTTCTCGTGTCTTCTGCTT
TGCATGGTATTTGAAGGGTAAGTGGGTGCCCGAGCGGTCTACACCTTCTACGGGATGTG-2700
GCCTCTCCTCCTGCTCCTGTTGGCGTTGCCAGCGGGCGTACGCGCTGGACACGGAAGT
GGCCGCGTCTGTGTCGCTGTTGTTCTCGTCGGGTTGATGGCGCTGACTGTGACCATTA
TTACAAGCGCTATATCAGCTGGTGTGTTGGTGGCTTCAAGTATTTCTGACCAGAGTGGG
AGCGCAACTGCAGGTGTGGATTCCCCCCTCAACGTCCGAGGGGGGCGGACGCCGTCAT
CTTACTCATGTGTGCTGTACACCGACTCTGGTATTTGACATACCAAATTGCTGTGTCG-3000
CGTCTTCCGACCCCTTTGGATTCTTCAAGCCAGTTTCTTAAAGTACCCTACTTTGTGCG
CGTCCAAGGCCTTCTCCGGTTTTCGCGGTTAGCGCGGAAGATGATCGGAGGCCATTACGT
GCAAATGGTTCATCATTAAAGTTAGGGGCGCTTACTGGCACCTATGTTTATAACCATCTCAC
TCCTCTTCCGGACTGGGCGCACAAACGGCTTGCAGATCTGGCCGTGGCTGTAGAGCCAGT
CGTCTTCTCCCAATGGAGACCAAGCTCATCAGTGGGGGGCAGATACCGCCGCGTGGCG-3300
TGACATCATCAACGGCTTGCCTGTTTCCGCCGAGGGGCGGGAGATACTGCTCGGGCC
AGCCGATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCCA
GCAGACAAGGGGCTCCTAGGGTGCATAATCACCAGCCTAACTGGCCGGGACAAAAACCA
AGTGGAGGGTGAAGTCCAGATTGTGTCAACTGCTGCCCAACCTTCTGGCAACGTGCAT

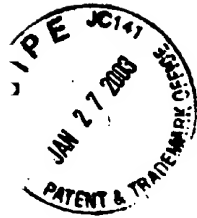


FIG. 62B

CAATGGGGTGTGCTGGACTGTCTACCACGGGGCCGGAACGAGGACCATCGCGTCACCCAA-3600
GGGTCCTGTCATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCC
GCAAGGTAGCCGCTCATTGACACCCTGCACTTGCGGCTCCTCGGACCTTTACCTGGTCAC
GAGGCACGCCGATGTATTCCCGTGCGCCGGCGGGGTGATAGCAGGGGCAGCCTGCTGTC
GCCCGGCCCATTTCTACTTGAAAGGCTCCTCGGGGGGTCCGCTGTTGTGCCCGCGGG
GCACGCCGTGGGCATATTTAGGGCCGCGGTGTGCACCCGTGGAGTGGCTAAGGCGGTGGA-3900
CTTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTC
CTCTCCACCAGTAGTGCCCCAGAGCTTCAGGTGGCTCACCTCCATGCTCCCACAGGCAG
CGGCAAAAGCACCAAGGTCCCGGTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
CAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGAT
CGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTACTC-4200
CACCTACGGCAAGTTCTTGGCGACGGCGGGTGTCTGGGGGGCGCTTATGACATAATAAT
TTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATCGGCACTGTCCTTGA
CCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTC
CGTCACTGTGCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCC
TTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGGAGACATCTCATCTTCTG-4500
TCATTCAAAGAAGAAGTGCGACGAACCTCGCCGCAAAGCTGGTCGCAATTGGGCATCAATGC
CGTGGGCTACTACCGCGGTCTTGACGTGTCCGTCACTCCGACCAAGCGGCGATGTTGTGCT
CGTGGCAACCGATGCCCTCATGACCGGTATACCGGCGACTTCGACTCGGTGATAGACTG
CAATACGTGTGTCAACCCAGACAGTCGATTTAGCCTTGACCTACCTTACCATTGAGAC
AATCACGCTCCCCCAGGATGCTGTCTCCGCACTCAACGTGCGGGCAGGACTGGCAGGGG-4800
GAAGCCAGGCATCTACAGATTTGTGGCACCGGGGGAGCGCCCTCCGGCATGTTGCACTC
GTCCGTCTCTGTGAGTGCTATGACGCAAGGCTGTGCTTGGTATGAGCTCACGCCCGCCGA
GACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCA
TCTTGAATTTGGGAGGGCGTCTTTACAGGCTCACTCATATAGATGCCCACTTTCTATC
CCAGACAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTG-5100
CGCTAGGGCTCAAGCCCTCCCCATCGTGGGACCAAGATGTGGAAGTGTGATTGCGCT
CAAGCCCAACCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTGAGATGA
AATCACCTGACGCACCCAGTCACCAATACATCATGACATGCATGTCGGCCGACCTGGA
GGTCGTACGAGCACCTGGGTGCTCGTTGGCGGCGTCTGGCTGCTTTGGCCGCGTATTG
CCTGTCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCTGTTGTCCGGGAAGCCGGCAAT-5400
CATACCTGACAGGGAAGTCTCTACCGAGAGTTTCGATGAGATGGAAGAGTGCTCTCAGCA
CTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGG
CCTCCTGCAGACCGCTCCCGTCAGGCAGAGGTTATCGCCCTGCTGTCCAGACCAACTG
GCAAAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATA
CTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTAC-5700
AGCTGCTGTACCAAGCCCACTAACCACTAGCCAAACCTCCTCTTCAACATATTGGGGGG
GTGGGTGGCTGCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTGGGCGCTGGCTT
AGCTGGCGCCGCCATCGGCAGTGTGGACTGGGGAAGGTCTCATAGACATCTTGCAGG
GTATGGCGCGGGCTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCC
CTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGT-6000
CGGCGTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCA
GTGGATGAACCGGCTGATAGCCTTTCGCTCCCGGGGGAACCATGTTTCCCCACGCACTA
CGTGCCGGAGAGCGATGCAGCTGCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAAC
CCAGCTCCTGAGGCGACTGCACCAAGTGGATAAGCTCGGAGTGTACCACTCATGCTCCGG
TTCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTG-6300



FIG. 62C

GCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCTGCCAGCGCGG
GTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
GATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCTAGGACCTGCAGGAA
CATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCTGTACCCCCCTTCC
TGCGCCGAACCTACACGTTCCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAG-6600
GCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCGTG
CCAGGTCCCATCGCCGAATTTTTACAGAATTGGACGGGGTGCCTACATAGGTTTGC
GCCCCCTGCAAGCCCTTGTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGAATA
CCCGGTAGGGTGCATTAACCTTGCAGGCCGAACCGGACGTGGCCGTGTTGACGTCCAT
GCTCACTGATCCCTCCCATATAACAGCAGAGGGCGGGCGGGAAGGTTGGCGAGGGGATC-6900
ACCCCCCTGTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAAC
TTGACCGCTAACCATGACTCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAG
GCAGGAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAAAGTGGTGATTCTGGA
CTCCTTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAAAT
CCTGCGGAAGTCTCGGAGATTTCGCCAGGCCCTGCCGTTTGGGCGCGGCCGACTATAA-7200
CCCCCGCTAGTGGAGACGTGGAAGAACGCCGACTACGAACCACTGTGGTCCATGGCTG
TCCGCTTCCACCTCCAAAGTCCCTCCTGTGCCTCCGCTCGGAAGAAGCGGACGGTGGT
CCTCACTGAATCAACCTATCTACTGCCTTGGCCGAGCTCGCCACCAGAAGCTTTGGCAG
CTCCTCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCGCCCTTC
TGCTGCCCGCCGACTCCGACGCTGAGTCTATTCTCCATGCCCGCCCTGGAGGGGGA-7500
GCCTGGGGATCCGGATCTTAGCGACGGGTATGGTCAACGGTCAGTAGTGAGGCCAACGC
GGAGGATGTCGTGTGCTCAATGTCTTACTCTTGGACAGGCGCACTCGTCACCCCGTG
CGCCGCGGAAGAACAGAACTGCCATCAATGCACTAAGCAACTCGTTGCTACGTACCA
CAATTTGGTGTATTCCACCACCTACGCAAGTGTGCCAAAGGCAGAGAAAGTCACATT
TGACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAGGTTAAAGCAGC-7800
GGCGTCAAAAGTGAAGGCTAAGTGTATCCGTAGAGGAAGCTTGCAGCCTGACGCCCTC
ACACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTTGCCATGCCAGAAA
GGCCGTAAACCCACATCAACTCCGTGTGGAAGACCTTCTGGAAGACAATGTAAACCAAT
AGACACTACCATCATGGCTAAGAACGAGGTTTCTGCGTTTCAAGCTGAGAGGGGGGTCG
TAAGCCAGCTCGTCTCATCGTGTTCGCCGATCTGGGCGTGCAGTGTGCGAAAAGATGGC-8100
TTTGTACGACGTGGTTACAAAGTCCCTTGGCCGTGATGGGAAGCTCCTACGGATTCCA
ATACTCACCAGGACAGCGGGTTGAATTCCTCGTGAAGCGTGGAAGTCCAAGAAAACCCC
AATGGGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCG
TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGCTGGCCATCAA
GTCCCTCACCGAGAGGCTTTATGTTGGGGGCCCTTTACCAATTCAAGGGGGGAGAACTG-8400
CGGCTATCGCAGGTGCCGCGGAGCGGCGTACTGACAACTAGCTGTGGTAACACCCTCAC
TTGCTACATCAAGGCCCGGGCAGCTGTGAGCCGCGAGGGCTCCAGGACTGCACCATGCT
CGTGTGTGGCGACGACTTAGTCTGTATCTGTGAAAGCGGGGGTCCAGGAGGACGGGGC
GAGCCTGAGAGCCTTACGGAGGCTATGACCAGGTAATCCGCCCCCTGGGGACCCCC
ACAACCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCAACGTGTAGTGCGCCA-8700
CGACGGCGCTGGAAGAGGGGTCTACTACCTCACCCTGACCTACAACCCCCCTCGCGAG
AGCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCAT
GTTTGGCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTAGCGTCTTAT
AGCCAGGGACAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCTGCTACTCCAT-9000
AGAACCCTTGTATCTACCTCAATCATTCAAAGACTCCATGGCTCAGCGCATTTTCACT
CCACAGTTACTCTCAGGTGAAATTAATAGGGTGGCCGATGCCTCAGAAAACCTTGGGGT
ACCGCCCTTGCAGCTTGGAGACACCGGGCCGAGCGTCCGCGCTAGGCTTCTGGCCAG
AGGAGGCGAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGCAGTAAGAACAAGCT
CAAA



FIG. 62D

1 CACTCCACCATGAATCACTCCCCTGTGAGGAACTACTGTCTTCACGCAGAAAGCGTCTAG
GTGAGGTGGTACTTAGTGAGGGGACACTCCTTGATGACAGAAAGTGCCTCTTTCGCAGATC

61 CCATGGCGTTAGTATGAGTGTCTGTCAGCCTCCAGGACCCCCCTCCGGGGAGAGCCATA
GGTACCGCAATCATACTCACAGCACGTGCGAGGTCTGGGGGGGAGGGCCCTCTCGGTAT

121 GTGGTCTGCGGAACCGGTGAGTACCGGAATTGCCAGGACGACGGGTCTTTCTTGGA
CACCAGACGCCCTTGGCCACTCATGTGCCCTTAACGGTCTGCTGGCCAGGAAAGAACCT

181 TCAACCCGCTCAATGCCTGGAGATTTGGGCGTGCCCCGCAAGACTGCTAGCCGAGTAGT
AGTTGGGCGAGTTACGGACCTCTAAACCCGCACGGGGGCGTTCTGACGATCGGCTCATCA

241 GTTGGGTGCGGAAAGGCCCTTGTGGTACTGCCTGATAGGGTGTGCGAGTGCCCCGGGAG
CAACCCAGCGCTTTCGGGAACACCATGACGGACTATCCACGAACGCTACGGGGCCCTC

301 GTCTCGTAGACCGTGCACCATGAGCACGAATCCTAAACCTCAAAAAAAAAACAAACGTAA
CAGAGCATCTGGCACGTGGTACTCGTGCTTAGGATTTGGAGTTTTTTTTTTGTTTGCATT

361 CACCAACCGTCGCCCCACAGGACGTCAAGTTCCCGGGTGGCGGTGAGATCGTTGGTGGAGT
GTGGTTGGCAGCGGGTGTCTGCGAGTTCAAGGGCCACCGCAAGTCTAGCAACCACCTCA

421 TTAATTGTTGCCGCGCAGGGGCCCTAGATTGGGTGTGCGCGCGACGAGAAAGACTTCCGA
AATGAACAACGGCGCGTCCCGGGATCTAACCACACGCGCGTGTCTTTCTGAAGGCT

481 GCGGTGCAACCTCGAGGTAGACGTGAGCCTATCCCAAGGCTCGTCGGCCCGAGGGCAG
CGCAAGCGTTGGAGCTCATCTGCAGTGCGATAGGGGTTCCGAGCAGCCGGGCTCCCGTC

541 GACCTGGGCTCAGCCCGGGTACCCTTGGCCCTCTATGGCAATGAGGGTGTGCGGTGGGC
CTGGACCCGAGTCGGGGCCATGGGAACCGGGGAGATACCGTTACTCCGACGCCACCCG

601 GGGATGGCTCCTGTCTCCCCGTGGCTCTCGGCTAGCTGGGGCCCCACAGACCCCGGGC
CCCTACCGAGGACAGAGGGGCACCGAGAGCCGGATCGACCCCGGGGTGTCTGGGGCCGC

661 TAGGTGCGCAATTTGGGTAAAGGTGATCGATACCCTTACGTGCGGCTTCGCCGACCTCAT
ATCCAGCGCGTTAAACCCATTCCAGTAGCTATGGGAATGCACGCCGAAGCGGCTGGAGTA

721 GGGGTACATACCGCTCGTCGGCGCCCTCTTGAGGGCGCTGCCAGGGCCCTGGCGCATGG
CCCCATGTATGGCGAGCAGCCGCGGGGAGAACTCCGCGACGGTCCCGGGACCGGCTACC

781 CGTCCGGGTTCTGGAAGACGGCGTGAACATGCAACAGGGAACCTTCTGGTTGCTCTTT
GCAGGCCCAAGACCTTCTGCCGCACTTGATACGTTGTCCCTTGGAAAGGACCAACGAGAAA

841 CTCTATCTTCTTCTGGCCCTGCTCTCTTGCTTGACTGTGCCGCTTCGGCCTACCAAGT
GAGATAGAAGGAAGACCGGACGAGAGAACGAACTGACACGGGCGAAGCGGATGTTCA

901 GCGCAACTCCACGGGGCTTTACCACGTCACCAATGATTGCCCTAACTCGAGTATTGTGTA
CGCGTTGAGGTGCCCCGAAATGGTGAGTGTTACTAACGGGATTGAGCTCATAACACAT

961 CGAGGCGGCCGATGCCATCCTGCACACTCCGGGGTGCCTCCCTTGCCTTCTGAGGGCAA
GCTCCGCCGGCTACGGTAGGACGTGTGAGGCCCCACGCAAGGGAACGCAAGCACTCCCGTT

1021 CGCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAAGGATGGCAAACCTCC
GCGGAGCTCCACAACCCACCGCTACTGGGGATGCCACCGGTGGTCCCTACCGTTTGAGGG

1081 CGCGACGCACTTCGACGTACATCGATCTGCTTGTGCGGAGCGCCACCCTCTGTTCCGGC
GCGCTGCGTCGAAGCTGCACTGATGCTAGACGAACAACCCCTCGCGGTGGGAGACAAGCCG

1141 CCTCTACGTGGGGGACCTATGCGGGTCTGTCTTTCTTGTGCGGCCAACTGTTACCTTCTC
GGAGATGCACCCCTGGATACGCCAGACAGAAAGAACAGCCGTTGACAAGTGAAGAG

1201 TCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCGGCCATATAAC
AGGGTCCGCGGTGACCTGCTGCGTTCAACGTTAACGAGATAGATAGGGCCGGTATATTG

1261 GGGTCACCGCATGGCATGGGATATGATGATGAAGTGGTCCCTACGACGGCGTTGGTAAT
CCCAGTGGCGTACCGTACCCTATACTACTACTTGACCAGGGGATGCTGCCGCAACCATTA



FIG. 62E

1321 GGCTCAGCTGCTCCGGATCCCACAAGCCATCTTGGACATGATCGCTGGTGTCTACTGGGG
CCGAGTCGACGAGGCCCTAGGGTGTTCGGTAGAACCTGTACTAGCGACCACGAGTGACCCC

1381 AGTCTTGGCGGGCATAGCGTATTTCTCCATGGTGGGGAACCTGGGCGAAGGTCTGTAGT
TCAGGACCGCCCGTATCGCATAAAGAGGTACCAACCCCTTGACCCGCTTCAGGACCATCA

1441 GCTGCTGCTATTTGCCGGCGTCGACGCGGAAACCCACGTACCGGGGGAAGTGCCGGCCA
CGACGACGATAAACGGCCGAGCTGCGCCTTTGGGTGCAGTGGCCCCCTTCACGGCCGGT

1501 CACTGTGTCTGGATTTGTTAGCCTCCTCGCACCAGGCGCCAAGCAGAAGCTCCAGCTGAT
GTGACACAGACCTAAACAATCGGAGGAGCGTGGTCCGCGGTTCTGTCTGACGGTCGACTA

1561 CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACTGCAATGATAGCCTCAA
GTTGTGGTTGCCGTCAACCGTGGAGTTATCGTGCCGGGACTTGACGTTACTATCGGAGTT

1621 CACCGGCTGGTTGGCAGGGCTTTTCTATCACCACAAGTTCAACTCTTCAGGCTGTCTGA
GTGGCCGACCAACCGTCCCAGAAAGATAGTGGTGTTCAGTTGAGAAAGTCCGACAGGACT

1681 GAGGCTAGCCAGCTGCCGACCCCTTACCGATTTTGACCAGGGCTGGGGCCCTATCAGTTA
CTCCGATCGGTGACGGCTGGGGAATGGCTAAACTGGTCCCGACCCCGGGATAGTCAAT

1741 TGCCAACGGAAGCGGGCCCCGACCAGCGCCCTACTGCTGGCACTACCCCCAAAACCTTG
ACGGTTGCCTTCGCCGGGGCTGGTGCGGGGATGACGACCCTGATGGGGGGTTTTGGAAC

1801 CGGTATTGTCCCCGGAAGAGTGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCCGT
GCCATAACACGGGCGCTTCTCACACACACAGGCCATATAACGAAGTGAGGGTCGGGGCA

1861 GGTGGTGGGAACGACCGACAGGTGCGGCGCGCCACCTACAGCTGGGGTGAAAATGATAC
CCACCACCTTGCTGGCTGTCCAGCCGCGCGGGTGGATGTGACCCCACTTTTACTATG

1921 GGACGTCTTCGTCCTTAACAATACCAGGCCACCGCTGGGCAATTGGTTCCGTTGTACCTG
CCTGCAGAAGCAGGAATTGTTATGGTCCGGTGGCGACCCGTTAACCAAGCCAACATGGAC

1981 GATGAACTCAACTGGATTACCAAAGTGTGCGGAGCGCCTCCTTGTGTATCGGAGGGGC
CTACTTGAGTTGACCTAAGTGGTTTCACACGCTCGCGGAGGAACACAGTAGCCTCCCCG

2041 GGGCAACAACACCCTGCACTGCCCCACTGATTGCTTCGCAAGCATCCGGACGCCACATA
CCCGTTGTTGTGGGACGTGACGGGGTACTAACGAAGGCGTTCTAGGCCTGCGGTGTAT

2101 CTCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTGCCTACCCGTATAG
GAGAGCCACGCCGAGGCCAGGGACCTAGTGTGGGTCCACGGACAGCTGATGGGCATATC

2161 GCTTTGGCATTATCCTTGTACCATCAACTACCCATATTTAAATCAGGATGTACGTGGG
CGAAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAATTTAGTCTACATGCACCC

2221 AGGGGTGGAACACAGGCTGGAAGCTGCCTGCAACTGGACGCGGGGCGAACGTTGCGATCT
TCCCAGCTTGTGTCCGACCTTCGACGGACGTTGACCTGCGCCCCGCTTGCAACGCTAGA

2281 GGAAGACAGGGACAGGTCCGAGCTCAGCCCGTTACTGCTGACCACTACACAGTGGCAGGT
CCTTCTGTCCCTGTCCAGGCTCGAGTCGGGCAATGACGACTGGTGATGTGTACCGTCCA

2341 CCTCCCGTGTTCCTTACAACCTACCAGCCTTGTCCACCGGCCCTATCCACCTCCACCA
GGAGGGCACAAGGAAGTGTGGGATGGTCGGAACAGGTGGCCGGAGTAGGTGGAGGTGGT

2401 GAACATTGTGGACGTGCAGTACTTGTACGGGGTGGGGTCAAGCATCGCGTCTGGGCCAT
CTTGTAAACCTGCACGTGATGAACATGCCCCACCCAGTTCTGAGCGCAGGACCCGGTA

2461 TAAGTGGGAGTACGTCGTTCTCTGTTCTTCTGCTTGCAGACGCGCGCTGCTGCTCTG
ATTACCCCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCGCGCAGACGAGGAC

2521 CTTGTGGATGATGCTACTCATATCCAAGCGGAGGCGGCTTTGGAGAACCTCGTAATACT
GAACACCTACTACGATGAGTATAGGGTTCGCTCCGCCGAAACCTCTTGGAGCATTATGA

2581 TAATGCAGCATCCCTGGCCGGGACGACGGTCTTGTATCCTTCTCGTGTCTTCTGCTT
ATTACGTGCTAGGGACCGGCCCTGCGTGCCAGAACATAGGAAGGAGCACAAGAAGACGAA



FIG. 62F

2641 TGCATGGTATTTGAAGGGTAAGTGGGTGCCCCGAGCGGTCTACACCTTCTACGGGATGTG
ACGTACCATAAACTTCCCATTCACCCACGGGCTCGCCAGATGTGGAAGATGCCCTACAC

2701 GCCTCTCCTCCTGCTCCTGTTGGCGTTGCCCCAGCGGGCGTACGCGCTGGACACGGAGGT
CGGAGAGGAGGACGAGGACAACCGCAACGGGGTGGCCGCGATGCGCGACCTGTGCCTCCA

2761 GGCCGCGTCGTGTGGCGGTGTTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTACCATA
CCGGCGCAGCACACCGCCACAACAAGAGCAGCCCACTACCGCGACTGAGACAGTGGTAT

2821 TTACAAGCGCTATATCAGCTGGTGTGTTGGTGGCTTCAGTATTTTCTGACCAGAGTGGG
AATGTTCCGATATAGTCGACCACGAACACCACGAAGTCATAAAAGACTGGTCTACCT

2881 AGCGCAACTGCACGTGTGGATTCCCCCTCAACGTCCGAGGGGGGCGCGACGCCGTCAT
TCGCGTTGACGTGCACACCTAAGGGGGGAGTTGCAGGCTCCCCCGCGCTGCGGCAGTA

2941 CTTACTCATGTGTGCTGTACACCCGACTCTGGTATTTGACATACCAAATTGCTGCTGGC
GAATGAGTACACGACATGTGGGCTGAGACCATAAACTGTAGTGGTTTAAACGACGACCG

3001 CGTCTTCGGACCCCTTTGGATTCTTCAAGCCAGTTTGCTTAAAGTACCCTACTTTGTGCG
GCAGAAGCCTGGGGAAACCTAAGAAGTTCGGTCAAACGAATTTTCATGGGATGAAACACGG

3061 CGTCCAAGGCCCTTCTCCGGTTCTGCGGTTAGCGCGGAAGATGATCGGAGGCCATTACGT
GCAGGTTCCGGAAGAGGCCAAGACGCGCAATCGCGCTTCTACTAGCTCCGGTAATGCA

3121 GCAAATGGTCATCATTAAAGTTAGGGGCGCTTACTGGCACCTATGTTTATAACCATCTCAC
CGTTTACCAGTAGTAATTCAATCCCGCGAATGACCGTGGATACAAATATTGGTAGAGTG

3181 TCCTCTTCGGGACTGGGCGCACAACGGCTTGCGAGATCTGGCCGTGGCTGTAGAGCCAGT
AGGAGAAGCCCTGACCCGCGTGTGGCGAACGCTCTAGACCGGCACCGACATCTCGGTCA

3241 CGTCTTCTCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGGCG
GCAGAAGAGGGTTTACCTCTGGTTCGAGTAGTGACCCCCCGTCTATGGCGGCGCACGCC

3301 TGACATCATCAACGGCTTGCCTGTTTCCGCCGCGAGGGGCGGGAGATACTGCTCGGGCC
ACTGTAGTAGTTGCCGAACGGACAAGGCGGGCGTCCCCGGCCCTCTATGACGAGCCCGG

3361 AGCCGATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCCA
TCGGCTACCTTACCAGAGGTTCCCACTCCAACGACCGCGGGTAGTGCCGCATGCGGGT

3421 GCAGACAAGGGGCTCCTAGGGTGCATAATCACCAGCCTAACTGGCCGGGACAAAAACCA
CGTCTGTTCCCGGAGGATCCACGATATTAGTGGTGGGATTGACCGGCCCTGTTTTTGGT

3481 AGTGGAGGGTGAGGTCCAGATTGTGTCAACTGCTGCCAAACCTTCTGGCAACGTGCAT
TCACCTCCCACTCAAGGTCTAACACAGTTGACGACGGGTTTGAAGGACCGTTGCACGTA

3541 CAATGGGGTGTGCTGGACTGTCTACCACGGGGCCGGAACGAGGACCATCGCGTACCCAA
GTTACCCACACGACCTGACAGATGGTGCCCCGGCTTGTCTCTGGTAGCGCAGTGGGTT

3601 GGGTCCTGTATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGGCTGGCCCCGCTCC
CCAGGACAGTAGGTCTACATATGGTTACATCTGGTTCTGGAACACCCGACCGGGCGAGG

3661 GCAAGGTAGCCGCTCATTGACACCCTGCACTTGGCGCTCCTCGGACCTTTACCTGGTCAC
GCTTCCATCGGGGAGTAACTGTGGGACGTGAACGCCGAGGAGCTGGAATGGACAGTG

3721 GAGGCACGCCGATGTCAATCCCGTGGCGGCGGGGTGATAGCAGGGGCGAGCTGTGTC
CTCCGTGCGGCTACAGTAAGGGCACGCGGCGGCCCACTATCGTCCCCGTGGACGACAG

3781 GCCCCGGCCCATTTCTACTTGAAAGGCTCCTCGGGGGTCCGCTGTTGTGCCCCGCGGG
CGGGGCGGGTAAAGGATGAACCTTCCGAGGAGCCCCCAGGCGACAACAGGGGCGCCC

3841 GCACGCCGTGGGCATATTTAGGGCCGCGGTGTGACCCGTTGGAGTGGCTAAGGCGGTGGA
CGTGGCGACCCGTATAAATCCCGGCCACACGTGGGCACCTACCGATTCCGCCACCT

3901 CTTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTC
GAAATAGGGACACCTCTTGGATCTCTGTTGGTACTCCAGGGGCCACAAGTGCCTATTGAG

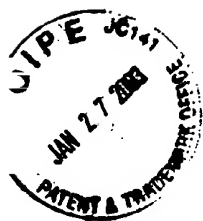


FIG. 62G

3961 CTCTCCACCAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCACAGGCAG
GAGAGGTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTG

4021 CGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
GCCGTTTTCTGTGGTTCCAGGGCCGACGTATACGTGAGTCCCGATATTCCACGATCATGA

4081 CAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGAT
GTTGGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTA

4141 CGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTACTC
GCTAGGATTGTAGTCTGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGCATGAG

4201 CACCTACGGCAAGTTCCTTGCCGACGGCGGGTCTCGGGGGGCGCTTATGACATAATAAT
GTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGGAATACTGTATTATTA

4261 TTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATCGGCACTGTCTTGA
AACACTGCTCACGGTGAGGTGCTACGGTGTAGGTAGAACCGTAGCCGTGACAGGAAT

4321 CCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTC
GGTTCGTCTCTGACGCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCCGAG

4381 CGTCACTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCC
GCAGTGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCTCTCTAGGG

4441 TTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTTCTG
AAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCTCTGTAGAGTAGAAGAC

4501 TCATTCAAAGAAGAAGTGCGACGAACTCGCCGCAAAGCTGGTGCATTGGGCATCAATGC
AGTAAGTTTCTTCTTACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCGTAGTTACG

4561 CGTGGCCTACTACCGCGGTCTTGACGTGTCCGTATCCCGACCAGCGGCGATGTTGTCTG
GCACCGGATGATGGCGCCAGAAGTGCACAGGCAGTAGGGCTGGTGCAGGCTACAACAGCA

4621 CGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTG
GCACCGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGAC

4681 CAATACGTGTGTACCCAGACAGTCGATTTACGCCTTGACCCTACCTTACCATTGAGAC
GTTATGCACACAGTGGGTCTGTACGCTAAAGTCGGAAGTGGGATGGGAAGTGGTAACCTG

4741 AATCACGCTCCCCAGGATGCTGTCTCCGCACTCAACGTGCGGGCAGGACTGGCAGGGG
TTAGTGCGAGGGGGTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCTGACCGTCCCC

4801 GAAGCCAGGCATCTACAGATTTGTGGCACCAGGGGGAGCGCCCTCCGGCATGTTGCACTC
CTTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGAGGCCGTACAAGCTGAG

4861 GTCCGTCCTCTGTGAGTGCTATGACGCAAGGCTGTGCTTGGTATGAGCTCAGCCCCGCCGA
CAGGCAGGAGACACTACGATACTGCGTCCGACACGAACCATACTCGAGTGCGGGCGGCT

4921 GACTACAGTTAAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCA
CTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACAGGTCTTGGT

4981 TCTTGAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCACTTTCTATC
AGAACTTAAACCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAAGATAG

5041 CCAGACAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTG
GGTCTGTTTCTGTCTCACCCCTCTTGGAAAGGAATGGACCATCGCATGGTTCGGTGGCACAC

5101 CGCTAGGGCTCAAGCCCCCTCCCCATCGTGGGACCAGATGTGGAAGTGTGTTGATTGCGCT
GCGATCCCGAGTTCGGGGAGGGGGTAGCACCCTGGTCTACACCTTCAAACTAAGCGGA

5161 CAAGCCACCCCTCCATGGGCCAACCCCTGCTATACAGACTGGGCGCTGTTTCAAGATGA
GTTGCGGTGGGAGGTACCCGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACT

5221 AATCACCCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTGCGCCGACCTGGA
TTAGTGGGACTGCGTGGGTGAGTGGTTTATGTAGTACTGTACGTACGCGGCTGGACCT

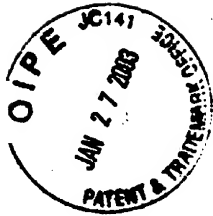


FIG. 62H

5281 GGTGTCACGAGCACCTGGGTGCTCGTTGGCGGCGTCCTGGCTGCTTTGGCCGCGTATTG
CCAGCAGTGCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACCGGCGCATAAC

5341 CCTGTCAACAGGCTGCGTGGTATAGTGGGACGGGTCGTCTTGCCGGGAAGCCGGCAAT
GGACAGTTGTCCGACGCACCAAGTATCACCCGTCCAGCAGAACAGGCCCTTCGGCCGTTA

5401 CATACTGACAGGGAAGTCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCA
GTATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCAGGAGAGTCGT

5461 CTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGG
GAATGGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCGGGAGCC

5521 CCTCTGACAGCCGCTCCCGTCAGGCAGAGGTTATCGCCCTGCTGTCCAGACCAACTG
GGAGGACGTCTGGCGCAGGGCAGTCCGTCTCAATAGCGGGACGACAGGTCTGGTTGAC

5581 GCAAAAACCTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATA
CGTTTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTACCCTATGTTAT

5641 CTTGGCGGGCTTGTCAACGCTGCTGGAACCCGCCATTGCTTCATTGATGGCTTTTAC
GAACCGCCCGAACAGTTGCGACGGACATTGGGGCGGTAACGAAGTAACACCGAAAATG

5701 AGCTGCTGTACACAGCCCACTAACCCTAGCCAAACCTCCTCTTCAACATATTGGGGGG
TCGACGACAGTGGTGCGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATAACCCCC

5761 GTGGGTGGCTGCCAGCTCGCCGCCCGGGTGGCGCTACTGCCCTTTGTGGGCGCTGGCTT
CACCCACCGACGGGTGAGCGGGCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAA

5821 AGCTGGCGCCGCGCATCGGCAGTGTTGGACTGGGGAAGGTCCTCATAGACATCCTTGACGG
TCGACCGCGGCGGTAGCCGTCAACCTGACCCCTTCAGGAGTATCTGTAGGAACGTCC

5881 GTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCC
CATACCGCGCCCGACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGG

5941 CTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGT
GAGGTGCCTCTTGACCAGTTAGATGACGGGCGGTAGGAGAGCGGGCTCGGGAGCATCA

6001 CGGCGTGCTGTGTGACGAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCA
GCCGACCGACACGTCGTTATGACGCGGGCGTGCAACCGGGCCGCTCCCCGTCACGT

6061 GTGGATGAACCGGCTGATAGCCTTCGCTCCCGGGGAACCATGTTTCCCCACGCACTA
CACCTACTTGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGTGCGTGAT

6121 CGTGCCGGAGAGCGATGCAGCTGCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAAC
GCACGGCTCTCGCTACGTGACGGGCGCAGTGACGGTATGAGTCGTGAGGTGACATTG

6181 CCAGCTCCTGAGGCGACTGCACCAAGTGGATAAGCTCGGAGTGTAACCTCCATGCTCCGG
GGTCGAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGTGAGGTACGAGGCC

6241 TTCCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTG
AAGGACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACCTCGTGAAATTCTGGAC

6301 GCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCCTGCCAGCGCGG
CGATTTTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGACGGTTCGCGCC

6361 GTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
CATATTCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACT

6421 GATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCTAGGACCTGCAGGAA
CTAGTGACCTGTACAGTTTTTGCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCCTT

6481 CATGTGGAGTGGGACCTTCCCATTAATGCCACACCGGGCCCTGTACCCCCCTTCC
GTACACCTCACCTGGAAGGGGTAATTACGGATGTGGTGGCCGGGGACATGGGGGGAAGG

6541 TGGCGCGAATAACGTTGCGGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAG
ACGCGGCTTGATGTGCAAGCGCGATACCTCCACAGACGTCTCCTTATACACCTCTATTC



FIG. 621

6601 GCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCGTG
CGTCCACCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAGAGTTTACGGGCAC

6661 CCAGGTCCCATCGCCGAATTTTTACAGAATTGGACGGGGTGCCTACATAGGTTTGC
GGTCCAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAAACG

6721 GCCCCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTGAGAGTAGGACTCCACGAATA
CGGGGGGACGTTGCGGAACGACGCCCTCCTCCATAGTAAGTCTCATCTGAGGTGCTTAT

6781 CCCGGTAGGGTCGCAATTACCTTGCGAGCCCGAACCAGGACGTGGCCGTGTTGACGTCCAT
GGGCCATCCCAGCGTTAATGGAACGCTCGGGCTTGGCTGCACCGGCACAACTGCAGGTA

6841 GCTCACTGATCCCTCCATATAACAGCAGAGGCGGGCGGCGAAGGTTGGCGAGGGGATC
CGAGTGACTAGGGAGGGTATATTGTCGTCTCGCCGGCCCGCTTCCAACCGCTCCCCTAG

6901 ACCCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAAC
TGGGGGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGTTG

6961 TTGCACCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAG
AACGTGGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTC

7021 GCAGGAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGA
CGTCTCTACCCGCCGTTGTAGTGTTCCCAACTCAGTCTTTGTTTCACTAAGACCT

7081 CTCCTTCGATCCGCTTGTTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCGAGAAAT
GAGGAAGCTAGGCGAACACCGCCTCCTCTGCTCGCCCTTAGAGGCATGGGCGTCTTTA

7141 CCTGCGGAAGTCTCGGAGATTCGCCAGGCCCTGCCGTTTGGGCGGGCCGACTATAA
GGACGCCCTTCAGAGCCTTAAGCGGGTCCGGGACGGGCAACCCGCGCGGCGCTGATATT

7201 CCCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCACCTGTGGTCCATGGCTG
GGGGGGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGACACCAAGGTACCGAC

7261 TCCGCTTCCACCTCCAAAGTCCCCTCCTGTGCTCCGCTCGGAAGAAGCGGACGGTGGT
AGGCGAAGGTGGAGGTTTACGGGGAGGACACGGAGGCGGAGCCTTCTTCGCTGCCACCA

7321 CCTCACTGAATCAACCCTATCTACTGCCTTGGCCGAGCTCGCCACCAGAAGCTTTGGCAG
GGAGTGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCGTC

7381 CTCCTCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCCGCCCTTC
GAGGAGTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGAAAG

7441 TGGCTGCCCCCGACTCCGACGCTGAGTCCTATTCTCCATGCCCCCTGGAGGGGGGA
ACCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCCCT

7501 GCCTGGGGATCCGGATCTTAGCGACGGGTGATGGTCAACGGTCAGTAGTGAGGCCAACGC
CGGACCCCTAGGCCTAGAATCGCTGCCAGTACCAGTTGCCAGTCATCACTCCGGTTGCG

7561 GGAGGATGTCGTGTGCTGCTCAATGTCTTACTCTTGACAGGCGCACTCGTCACCCCGTG
CCTCTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGCAC

7621 CGCCGCGGAAGAACAGAACTGCCATCAATGCACTAAGCAACTCGTTGCTACGTACCA
GCGGCGCCTTCTGTCTTTGACGGGTAGTTACGTGATTGTTGAGCAACGATGCAGTGGT

7681 CAATTTGGTGTATTCCACCACCTCACGCACTGCTTGCCAAAGGCAGAGAAAGTCACATT
GTTAAACCACATAAGGTGGTGGAGTGCCTCACGAACGGTTTCCGTCTTCTTCAGTGTA

7741 TGACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTAAGGAGGTTAAAGCAGC
ACTGTCTGACGTTCAAGACCTGTGCGTAATGGTCTGATGAGTTCTCCAATTTCTGTCG

7801 GCGGTCAAAAGTGAAGGCTAATTGCTATCCGTAGAGGAAGCTTGACGCTGACGCCCC
CCGACGTTTTCACTTCCGATTGAACGATAGGCATCTCCTTGAACGTGCGACTGCGGGGG

7861 ACACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTTGCCATGCCAGAA
TGTGAGTCGGTTTAGGTTCAAACCAATACCCCGTTTTCTGCAGGCAACGGTACGGTCTTT



FIG. 62J

7921 GGCCGTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACAATGTAACACCAAT
CCGGCATTGGGTGTAGTTGAGGCACACCTTTCTGGAAGACCTTCTGTTACATTGTGGTTA

7981 AGACACTACCATCATGGCTAAGAAGAGGTTTTCTGCGTTAGCCTGAGAAGGGGGGTCG
TCTGTGATGGTAGTACCGATTCTTGCTCCAAAAGACGCAAGTCGGACTCTTCCCCCAGC

8041 TAAGCCAGCTCGTCTCATCGTGTTCGGCATCTGGGCGTGCGCGTGTGCGAAAAGATGGC
ATTCGGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACACGCTTTTCTACCG

8101 TTTGTACGACGTGGTTACAAAGCTCCCTTGGCCGTGATGGGAAGCTCCTACGGATTCCA
AAACATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCTTCGAGGATGCCTAAGGT

8161 ATACTACCAAGGACAGCGGGTTGAATTCCTCGTGCAAGCGTGGAAGTCCAAGAAAACCCC
TATGAGTGGTCTGTGCGCCAACTTAAGGAGCACGTTGCGACCTTCAGGTTCTTTGGGG

8221 AATGGGGTTCTCGTATGATACCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCG
TTACCCCAAGAGCATACTATGGGCGACGAACTGAGGTGTGAGTCACTCTGCTGTAGGC

8281 TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCAAGCCCGCGTGGCCATCAA
ATGCCTCTCCGTTAGATGTTTACAACACTGGAGCTGGGGGTTGCGGCGACCGGTAGTT

8341 GTCCCTCACCGAGAGGCTTTATGTTGGGGGCCCTTTACCAATTCAAGGGGGGAGAAGT
CAGGGAGTGGCTCTCCGAAATACAACCCCGGGGAGAAAGTTAAGTTCCCCCTCTTGAC

8401 CGGCTATCGCAGGTGCCGCGGAGCGGCGTACTGACAAGTACTGTTGTTAAGTCAACCCCTCAC
GCCGATAGCGTCCACGGCGGCTCGCCGATGACTGTTGATCGACACCATTGTGGGAGTG

8461 TTGCTACATCAAGGCCCGGGCAGCCTGTGAGCCGCGAGGGCTCCAGGACTGCACCATGCT
AACGATGTAGTTCCGGGCGCGTGGACAGCTCGGCGTCCCGAGGTCTGACGTGGTACGA

8521 CGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGGGGGTCCAGGAGGACGCGGC
GCACACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCAGGTCTCTGCGCCG

8581 GAGCCTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCCTGGGGACCCCCC
CTCGGACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGCGGGGGGACCCCTGGGGG

8641 ACAACCAGAATACGACTTGGAGCTCATAACATCATGCTCTCCAACGTGTGAGTCGCCCCA
TGTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGT

8701 CGACGGCGCTGGAAAGAGGGTCTACTACCTACCCGTGACCCTACAACCCCCCTCGCGAG
GCTGCCGCGACCTTTCTCCAGATGATGGAGTGGGCACTGGGATGTTGGGGGAGCGCTC

8761 AGCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCAT
TCGACGCAACCTCTGTGCTTCTGTGTGAGGTGAGTTAAGGACCGATCCGTTGTATTAGTA

8821 GTTTGCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCTTAT
CAAACGGGGTGTGACACCCGCTCTACTATGACTACTGGGTAAAGAAATCGCAGGAATA

8881 AGCCAGGGACAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCTGCTACTCCAT
TCGGTCCCTGGTGAACCTGTCCGGGAGCTAACGCTTAGATGCCCCGGACGATGAGGTA

8941 AGAACCCTTGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTTCACT
TCTTGGTGAAGTAGATGGAGTTAGTAAGTTTCTGAGGTACCGGAGTCGCGTAAAAGTGA

9001 CCACAGTACTCTCCAGGTGAAATTAATAGGGTGGCCGATGCCTCAGAAAACCTTGGGGT
GGTGTCAATGAGAGGTCCACTTTAATTATCCACCGGCGTACGGAGTCTTTGAACCCCA

9061 ACCGCCCTTGCGAGCTTGGAGACACCGGGCCGGAGCGTCCGCGCTAGGCTTCTGGCCAG
TGGCGGGAACGCTCGAACCTCTGTGGCCCGGGCTCGCAGGCGGATCCGAAGACCGGT

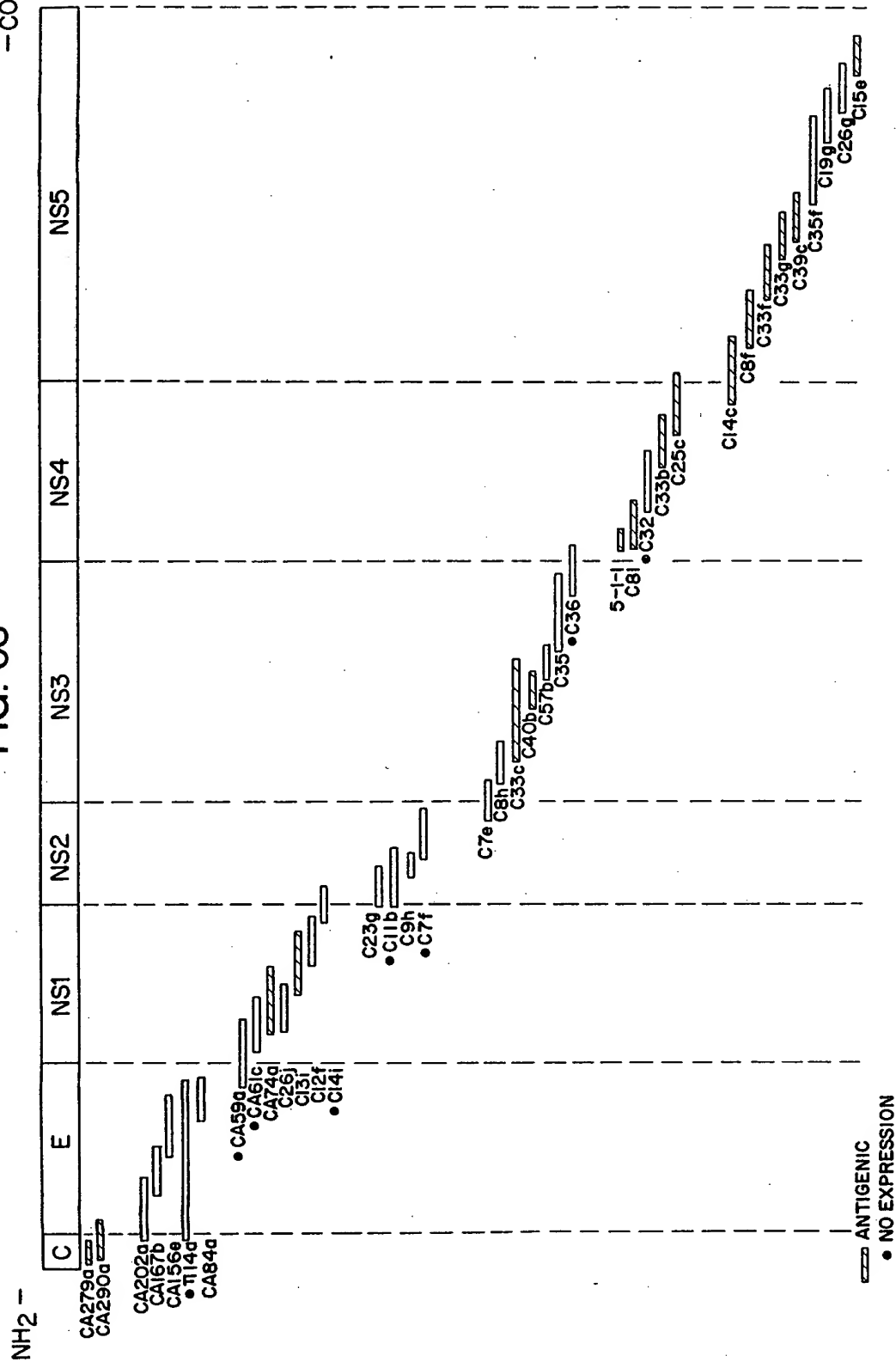
9121 AGGAGGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGAGTAAGAACAAAGCT
TCCTCCGTCCCGACGGTATACACCGTTTATGGAGAAGTTGACCCGTCATTCTTGTTCGA

9181 CAAAC
GTTTG



FIG. 63

-COOH



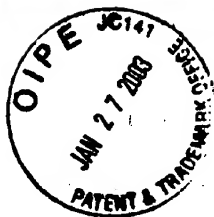
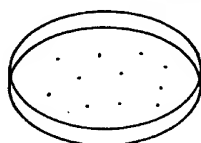


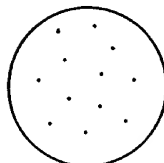
FIG. 64

TRANSFORM E coli WITH RECOMBINANT PLASMIDS

↓ (BLOT BACTERIA ON
NITROCELLULOSE FILTER)



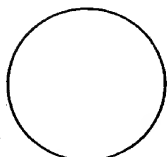
IPTG PLATE



LYSE WITH CHLOROFORM



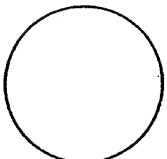
BSA ABSORPTION/DNAse/LYSOZYME



INCUBATE WITH PRIMARY
ANTIBODY



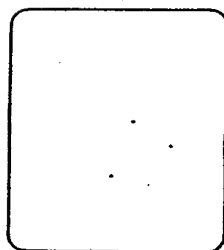
WASH



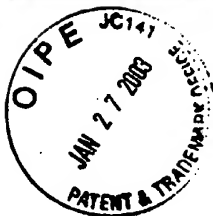
INCUBATE WITH
 ^{125}I SECONDARY ANTIBODY



WASH



AUTORADIOGRAPH



	EXPRESSION LEVEL	CHIMPS			CHRONIC HCV PATIENT C100 POSITIVE								CHRONIC HCV PATIENT C100 NEGATIVE								CONVULSANT C100 NEGATIVE					COMMUNITY AC				
		1 POST ACUTE	2 POST ACUTE	3 C100 CONVERSION	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	CONVULSANT C100 NEGATIVE	1 C100(+)	2 C100(+)	3 C100(-)	4 C100(-)	5 C100(-)				
SOD	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CA259a	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-				
CA290a	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-				
CA202a	N.T.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CA167a	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CA156C	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
π14a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CA84a	±	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CA59a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CA61C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CA74a	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C26j	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C13i	±	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C12f	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C14i	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C23g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C11b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C9h	±	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C7f	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C7e	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C8h	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C33c	+	+	±	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	±	+	+	-	±	-				
C40g	±	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C37b	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C35	±	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
5-11	+	-	-	+	±	+	+	+	+	+	+	-	-	-	-	-	+	+	+	+	+	-	±	+	+	-				
C8i	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-				
C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C33b	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C25c	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-				
C14c	+	-	-	±	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	+	-	+	-	-	-				
C8f	±	-	-	+	-	-	+	+	+	+	+	+	-	-	-	-	+	-	-	-	-	+	+	-	-	-				
C33f	-	-	-	-	-	+	+	-	-	-	+	-	+	-	-	-	-	-	+	-	-	+	-	-	-	-				
C33g	±	-	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+	+	-	-	-				
C39c	+	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-				
C35f	N.T.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C19g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C26g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C15e	±	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	±	-	-	-	-	-				

N.T. = EXPRESSION NOT TESTED
 ± THIS POLYPEPTIDE WAS NEGATIVE IN THIS COLONY SCREEN BUT POSITIVE BY WESTERN BLOT ANALYSIS

FIG. 65

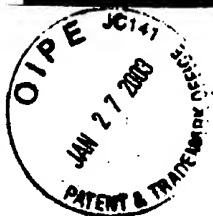


FIG. 66A

R T
MSTNPKPQKKNRNTNRRPQDVKFPGGGQIVGGVYLLPRRGPRLGVRATR
KTSERSQPRGRRQPIPKARRPEGRTWAQPGYPWPLYGNEGCGWAGWLLSP-100
RGSRPSWGPTDPRRRSRNLGKVIDTLTCGFADLMGYIPLVGAPLGGAARA

T
LAHGVRVLEDGVNYATGNLPGCSFSIFLLALLSCLTVPASAYQVRNSTGL-200
YHVTNDCPNSSIVYEAADAILHTPGCVPCVREGNASRCWVAMTPTVATRD
GKLPATQLRRHIDLLVGSATLCSALYVGDLCGSVFLVGQLFTFSPRRHWT-300

V
TQGCNCSIYPGHITGHRMAWDMMMNWSPTTALVMAQLLRIPQAILDMIAG
AHWGVLAGIAYFSMVGNWAKVLVLLLFAGVDAETHVTGGSAGHTVSGFV-400
SLLAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWLAGLFYHHKFNS
GCPERLASCRPLTDFDQGWGPISYANGSGPDQRPYCWYPPKPCGIVPAK-500
SVCGPVYCFTSPVVGTTDRSGAPTYSWGENDTDFVFLNNTRPPLGNWF
GCTWMNSTGFTKVCGAPPCVIGGAGNNTLHCPTDCFRKHPDATYSRCGSG-600

I
PWLTPRCLVDYPYRLWHYPCTINYTIFKIRMYVGGVEHRLEAACNWTRGE
RCDLEDRDRSELSPLLLTTTQWQVLPCSFTTLPALSTGLIHLHQNIYDVQ-700
YLYGVGSSIASWAIKWEYVLLFLLADARVCSCWMLLI SQAEAALEN
LVILNAASLAGTHGLVSFLVFFCFAWYLGKWVPGAVYTFYGMWPLLLLL-800

(N)
LALPQRAYALDTEVAASCGGVVLVGLMALTLSPYYKRYISWCLWWLQYFL
TRVEAQLHVWIPPLNVRGGRDAVILLMCAVHPTLVFDITKLLAVFGPLN-900
ILQASLLKVYPFVRVQGLLRFALARKMIGGHYVQMVIKLGALTGTYY
NHLTPLRDWAHNGLRDLAVAVEFVVSQMETKLITWGADTAACGDIINGL-1000
PVSARRGREILLGPADGMVSKGWRLAPITAYAQQTRGLLGCIITSLTGR
DKNQVEGEVQIVSTAAQTTFATCINGVCWTVYHGAGTRTIASPKGPVIQM-1100
YTNVDQDLVGWPAPQGSRLTPCTCGSSDLYLVTRHADVIPVRRRGDSRG
SLLSPRPISYLGSSGGPLLCPAGHAVGIFRAAVCTRGVAKAVDFIPVEN-1200
LETTMRSPVFTDNSSPPVVPQSFQVAHLHAPTGS GKSTKVPAAYAAAGGYK

L
VLVLNPSVAATLGFGAYMSKAHGIDPNIRTGVRTITTGSPITYSTYGKFL-1300
ADGGCSCGGAYDIIICDECHSTDATSILGIGTVLDQAETAGARLVVLATAT
PPGSVTVPHPNIEEVALSTTGEIPFYGKAIPLEVIKGRHLIFCHSKKKC-1400
DELA AKLVALGINAVAYYRGLDVSVIPTSGDVVVVATDALMTGYTGDFDS

Y (S)
VIDCNTCVTQTVDFSLDPTFTIETITLPQDAVSRTQRRGRTGRGKPGIYR-1500
FVAPGERPSGMFDSVLCEDYDAGCAWYELTPAETTVRLRAYMNTPLPV
CQDHLEFWEGVFTGLTHIDAHFLSQTQSGENLPYL VAYQATVCARAQAP-1600
PPSWDQMWKCLIRLKPTLHGPTLLYRLGAVQNEITLTHPVTKYIMTMS
ADLEVVTSTWVLVGGVLAALAAYCLSTGCVVIVGRVLSGKPAIIPDREV-1700
LYREFDEMEECQHLPYIEQGMMLAEQFKQKALGLLQTASRQAEVIAPAV
QTNWQKLETFWAKHMWNFISGIQYLAGLSTLPGNPAIASLMAFTA AVTSP-1800
LTTSQLLLFNILGGWVAAQLAAPGAATAFVGAGLAGAAIGSVGLGKVLID



FIG. 66B

(G)
ILAGYGAGVAGALVAFKIMSGEVPSTEDLVNLLPAILSPGALVVGVVCAA-1900

(HC)
ILRRHVGPGEAVQWMNRLIAFASRGNHVSPTHYVPESDAAARVAILSS
LTVTQLLRRLHQWISSECTTPCSGSLRDIWDWICEVLSDFKTWLKAKLM-2000

(V)
PQLPGIPFVSCQRGYKGVWRGDGIMHTRCHCGAEITGHVKNGTMRIVGPR
TCRNMWSGTFPINAYTTGPCTPLPAPNYTFALWRVSAEEYVEIRQVGDFH-2100
YVTGMTTDNLKPCQVPSPEFFTEL DGVRLHRFAPPCKPLLREEVSFRVG
LHEYPVGSQLPCEPEPDVAVLTSMLTDP SHITAEAGRRRLARGSPPSVAS-2200
SSASQLSAPSLKATCTANHDSPDAEL IEANLLWRQEMGGNITRVESENKV
VILDSFDPLVAEEDEREISVPAEILRKSRRFAQALPVWARPDPYNPLVET-2300

S
WKKPDYEPVHVHCPLPPPKSPPVPPPRKKRTVVLTESTLSTALAEATR

(FA)
SFGSSSTSGITGDNTTTSSEPAPSGCPPDSDAESYSSMPPLEGEPGDPDL-2400
SDGSWSTVSSEANAEDVVCCSMSYSWTGALVTPCAAEEQKLPINALSNL
LRHNLVYSTTSRSACQRQKKVTFDR LQVLDSHYQDVLKEVKAAASKVKA-2500

(F)
NLLSVEEACSLTPPHSAKSKFGYGAKDVRCHARKAVTHINSVWKDLEDN
VTPIDTTIMAKNEVFCVQPEKGGRKPARLIVFPDLGVRVCEKMALYDVVT-2600
KLPLAVMGSSYGFQYSPGQRVEFLVQAWKSKKTPMGFSYDTRCFDSTVTE

(G)
SDIRTEEAIYQCCDLDPQARVAIKSLTERLYVGGPLTNSRGENCGYRRCR-2700
ASGVLTTSCGNTLTICYIKARAACRAAGLQDCTMLVCGDDL VVICESAGVQ
EDAASLRAFTEAMTRYSAAPPDPPQPEYDLELITSCSSNVSAHDGAGKR-2800
VYYLTRDPTTPLARAAWETARHTFVNSWLGNIIMFAPTLWARMILMTHFF
SVLIARDQLEQALDCEIYGACYSIEPLDLPIIQRLHGLSAFSLHSYSPG-2900

G
EINRVAACLRKLGVPPLRAWHRARSVRARLLARGGAAICGKYLFWAV
RTKLK----- (Stop codon not yet reached)

() = Heterogeneity due to possible 5' or 3' terminal cloning artefacts.

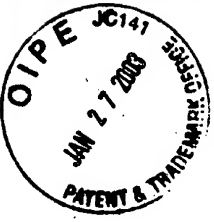


FIG. 67A

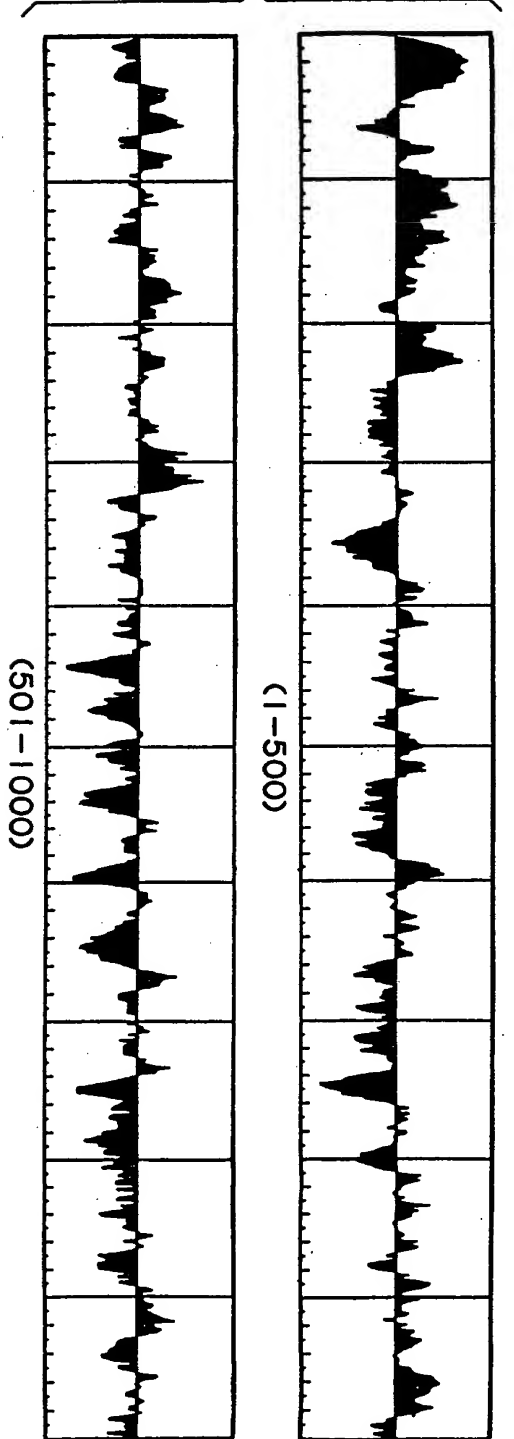
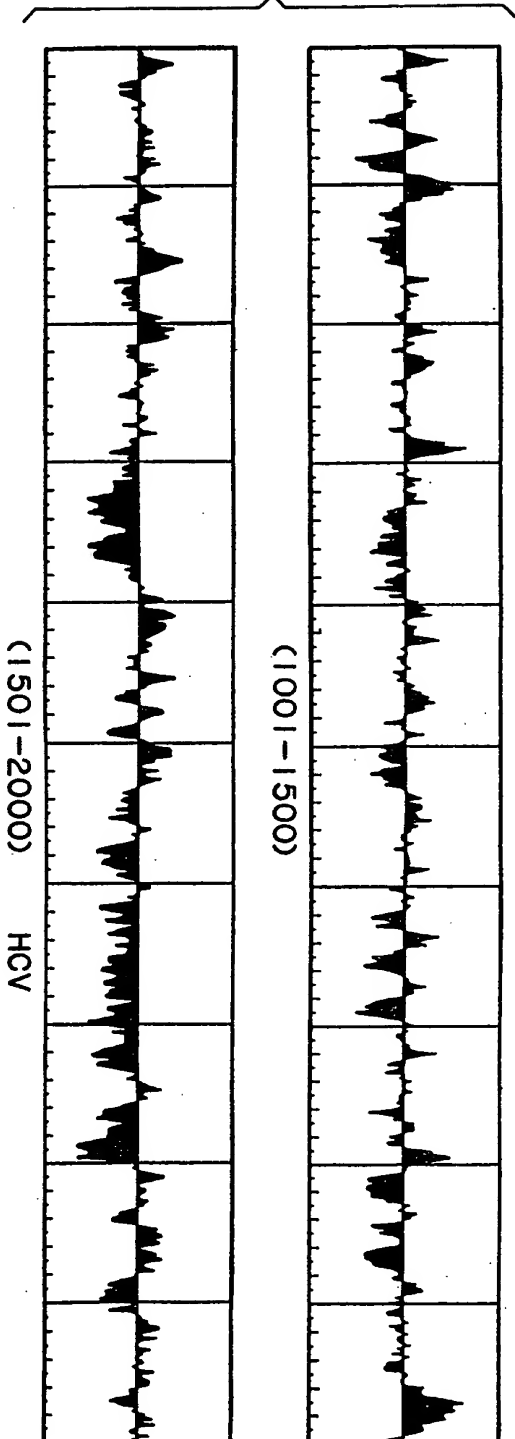


FIG. 67B



(1501-2000) HCV



FIG. 67C

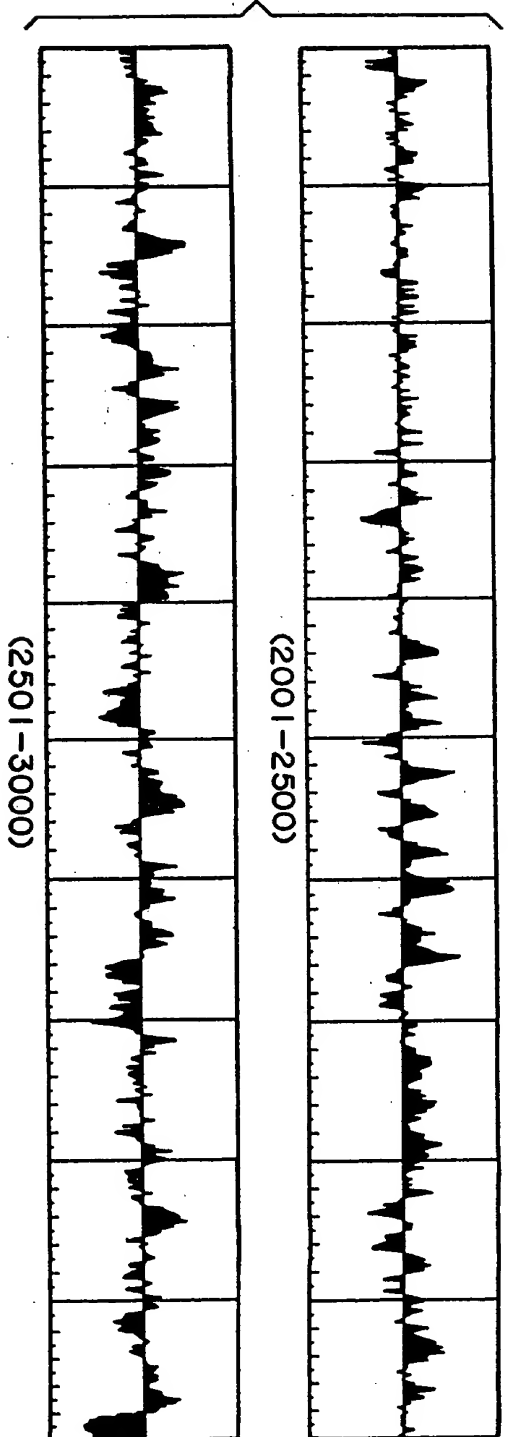
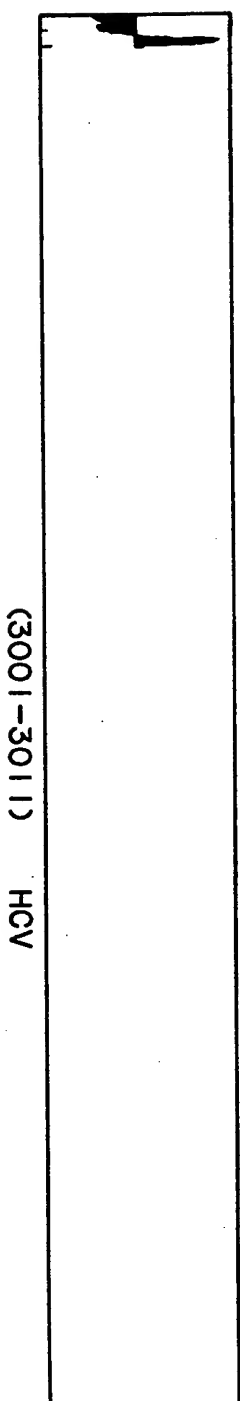


FIG. 67D



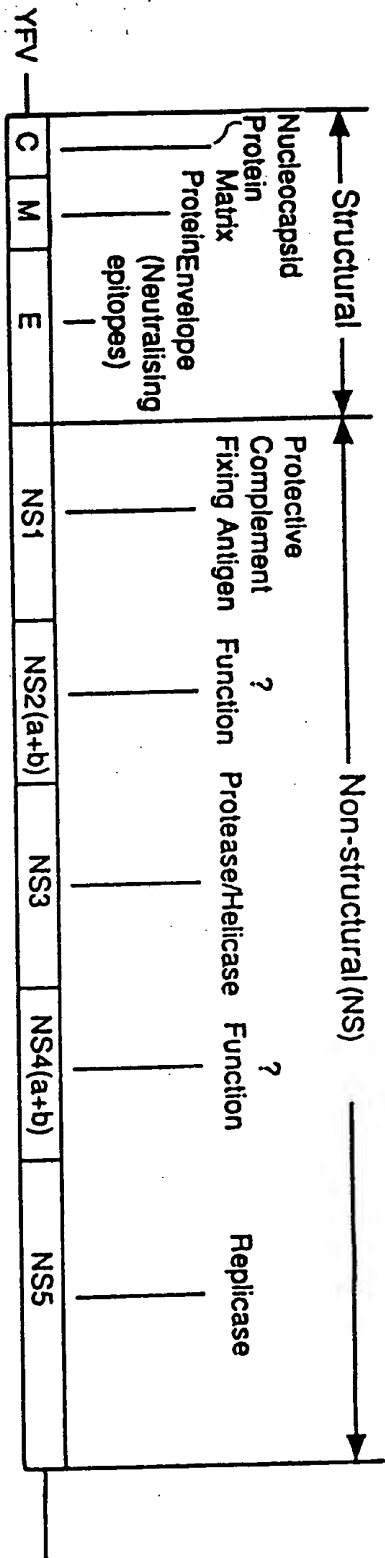


FIG. 69

☐ 5-1-1
☐ C100

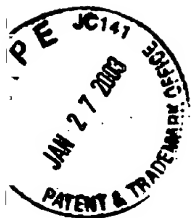


FIG. 68

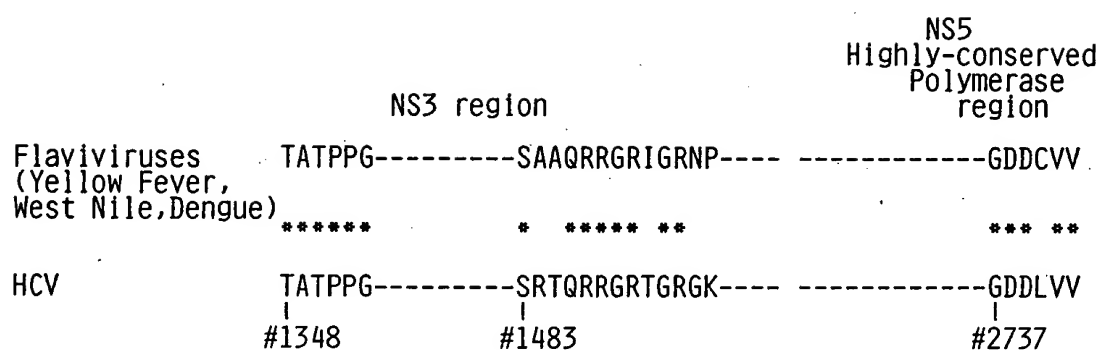


FIG. 73

5' CCGGGCGAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAAC 3'

3' CGCTCCCCGTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTG 5'

5' CATGTTTCCCCCTAATGAG 3'

3' GTACAAAGGGGGATTACTCAGC 5'

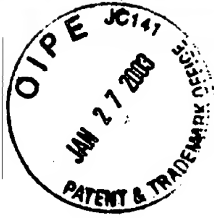


FIG. 70

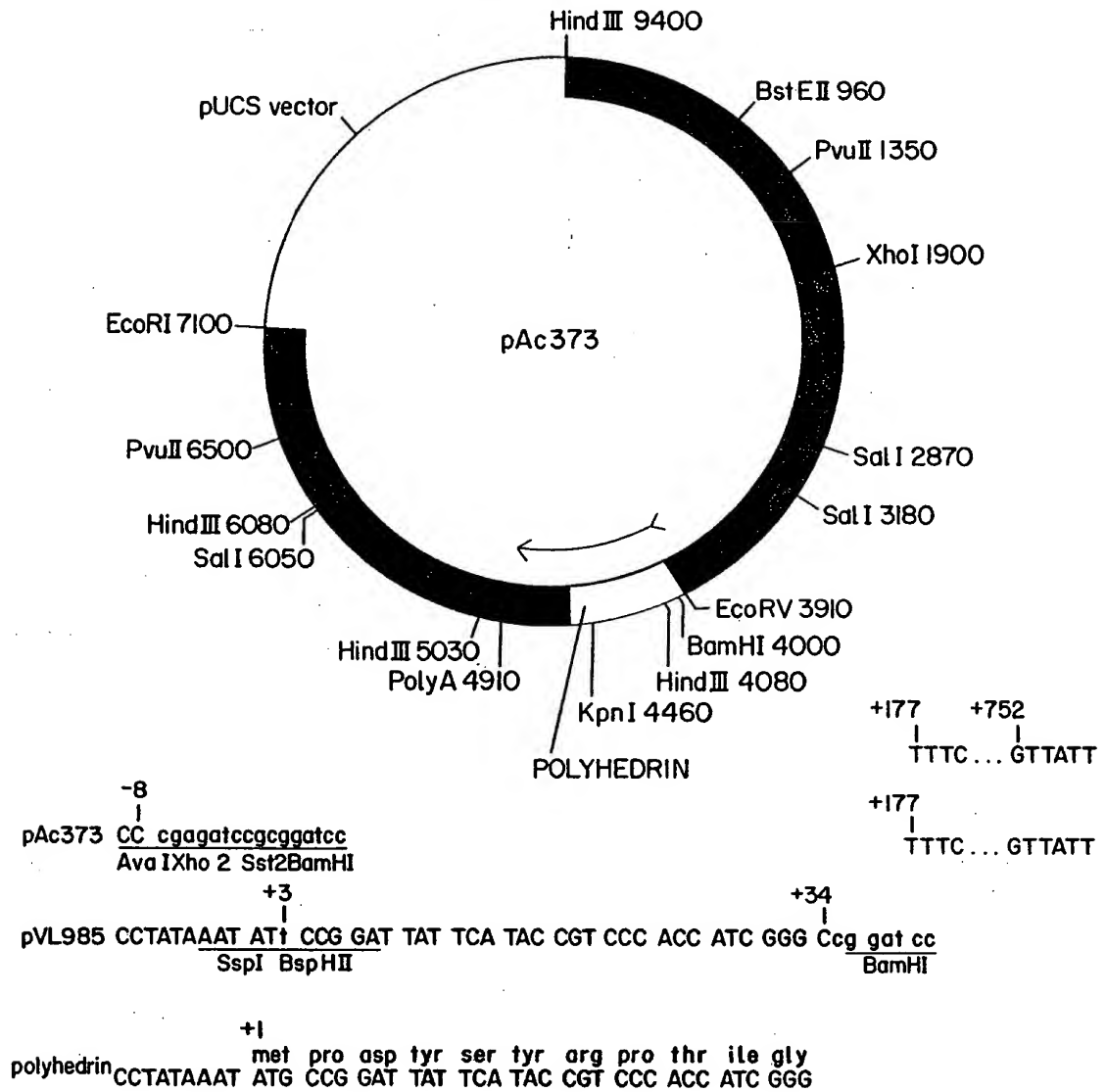


FIG. 71

-----Overlap with 16jh-----
 1 GlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLys
 GGCAGGGCTGCCATATGTGCCAAGTACCTCTTCAACTGGCAGTAAGAACAAAGCTCAAA
 CCGTCCCGACGGTATACACCGTTTCATGGAGAAGTTGACCCGTCATCTTGTTCAGATT
 61 LeuThrProIleAlaAlaIleGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyr
 CTCACCTCCAATAGCGCGCGCTGGCCAGCTGCACTTGTCCGCTGTTACCGGCTGGCTAC
 GAGTCAGGTTATCGCCCGCGCACCGCTCGACCTGAACAGCGCCGACCAAGTCCCGACCGATG
 121 SerGlyGlyAspIleTyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
 AGCGGGGAGACATTTATCACAGCGTCTCTCATGCCGCCGCCGCTGATCTGTTTGC
 TCGCCCCCTCTGTAATAAGTGTCCGACAGAGTACGGGCCGGCGGACCTAGACCAAAACG
 181 CC
 CG

FIG. 72A

1 MetSerThrAsnProLysProGlnArgLysThrLysArgAsnThrAsnArgArgProGln
 ATGAGCACGAATCCCTAAACCTCAAAAAAACAACGTAACACCAACCGTCGCCACAG
 TACTCGTGTAGGATTTGGAGTTTCTTTTGTGTTGCAATTGTGTTGGCAGCGGCTGTC
 61 AspValLysPheProGlyGlyGlyGlnIleValGlyGlyValTyrLeuLeuProArgArg
 GACGTCAAGTTCGCCGGGTGGCGGTCAGATCGTTGGTGGAGTTTACTTGTGCGCGCAGG
 CTGCAGTTCAAGGGCCACCGCCAGTCTAGCAACCACTCAAAATGAACACACGGCGGCTCC

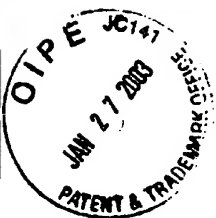


FIG. 72B

121 GLYProArgLeuGlyValArgAlaThrArgLysThrSerGluArgSerGlnProArgGly
 GGCCCTAGATTGGGTGTGCGCGCAGACGAGAAGACTTCGAGCGGTCCCAACCTCGAGGT
 CCGGATCTAACCCACACGCGCGCTGCTCTTCTGAAGGCTCGCCAGCGTTGGAGCTCCA

 181 ArgArgGlnProIleProLysAlaArgArgProGluGlyArgThrTrpAlaGlnProGly
 AGACGTCAGCCCTATCCCCAAGGCTCGTCGCGCCGAGGGCAGGACCTGGGCTCAGCCCCGG
 TCTGCAGTCGGATAGGGGTTCGAGCAGCCGGGCTCCCGTCTGGAACCCGAGTCGGGGCC

 241 TyrProTrpProLeuTyrGlyAsnGluGlyCysGlyTrpAlaGlyTrpLeuLeuSerPro
 TACCTTGGCCCTCTATGCAATGAGGCGTGGGGTGCGGATGGCTCCTGCTCC
 ATGGGAACCGGGAGATACCGTTACTCCCGACGCCACCCGCTACCGAGGACAGAGGG

 301 ArgGlySerArgProSerTrpGlyProThrAspProArgArgSerArgAsnLeuGly
 CGTGGCTCTCGGCTAGCTGGGGCCCCACAGACCCCGCGTAGGTCCGCCAATTGGGT
 GCACCGAGAGCCGGATCGACCCCGGGGTGTCTGGGGGCCGATCCAGCGCGTTAAACCA

 361 LysValIleAspThrLeuThrCysGlyPheAlaAspLeuMetGlyTyrIleProLeuVal
 AAGTTCATCGATACCCCTTACGTGCGGCTTCGCCGACCTCATGGGTACATACCGCTCGTC
 TTCCAGTAGCTATGGGAATGCACGCCGAAGCGCTGAGTACCCCATGTATGGCGAGCAG

 421 GlyAlaProLeuGlyGlyAlaAlaArgAlaLeuAlaHisGlyValArgValLeuGluAsp
 GCGGCCCCCTCTTGAGAGGCGCTGCCAGGGCCCTGGCGCATGGCGTCCGGGTTCGGAAGAC
 CCGCGGGGAGAACCTCCGCGACGGTCCCGGGAACCGGTACCGCAGGCCCAAGACCTTCTG

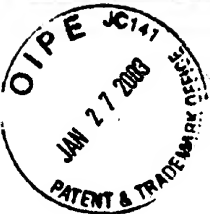


FIG. 72C

481 GLYValAsnTyrAlaThrGlyAsnLeuProGlyCysSerPheSerIlePheLeuLeuAla
 GCGGTGAACtATGCAACAGGAAcCCTTCCtGGTtGCTCTTCTCTATCTTCCTTCGGCC
 CCGCACTTGATACGTtGTCCCTTGGAAGGACCACAGAGAAAGAGATAGAAGGAAcCCGG

541 LeuLeuSerCysLeuThrValProAlaSerAlaTyrGlnValArgAsnSerThrGlyLeu
 CTGCTCTCTTtGCTTGACTGTGCCCTTCGGCTTACCAGTGCGCACTCCACGGGGCTT
 GACGAGAGAAcCAACTGACACGGGGCGAAGCCGGATGGTTCAcCGCGTTGAGGTGCCCGAA

601 TyrHisValThrAsnAspCysProAsnSerSerIleValTyrGlnAlaAlaAspAlaIle
 TACCACGTCACCAATGATtGCCCTAACTCGAGTATtGTGTACGAGCGCGCGATGCCATC
 ATGGTGCAGTGGTTACTTAACGGGATtTGAGCTCATTAACACATGCTCCCGCGCTACGGTAG

661 LeuHisThrProGlyCysValProCysValArgGlnGlyAsnAlaSerArgCysTrpVal
 CTGCACACTCCGGGGTGGTCCCTTtGCGTtGTGAGGGCAACGCCCTCGAGGTtGGGTG
 GACGTGTGAGGCCCCACGCAAGGGAACGCAAGCACTCCCGTTGCGGAGCTCCACAACCCAC

721 AlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThrGlnLeuArgArg
 GCGATGACCCCTACGGGTGGCCACcAGGATGGCAAACTCCCGCGACGCACTTCGACGT
 CGCTACTGGGATGCCACCGGTGTCCCTACCGTTTGAGGGGGCGCTGCGTCCGAAGCTGCA

781 HisIleAspLeuLeuValGlySerAlaThrLeuCysSerAlaLeuTyrValGlyAspLeu
 CACATCGATCTGCTtGTtGGGAGCGCCACCCCTGTtGGCCCTTACGTGGGGGACCTG
 GTGTAGCTAGACGAACAGCCCTTCGGGTGGGAGACAAAGCCGGGAGATGCACCCCTGGAC

841 CysGlySerValPheLeuValGlyGlnLeuPheThrPheSerProArgArgHisTrpThr
 TGCGGGTCTGTCTTCTTGTGGCCAACTGTTCACCTTCTCTCCAGGGCCCACTGAGC
 ACGCCCAcAGACAAAGAACAGCCGGTTGACAAGTGGAAGAGAGGTCGGCGGTGACCTGC



FIG. 72D

901 ThrGlnGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArgMetAlaTrp
ACGCAAGGTGCAATTGCTCTATCTATCCCGGCATATTAACGGGTCACCGCATGGCATGG
TGGGTTCCAACGTTAACGAGATAGATAGGGCCGGTATATTGCCAGTGGCGTACCCTACC

961 AspMetMetMetAsnTrpSerProThrThrAlaLeuValMetAlaGlnLeuLeuArgIle
GATATGATGATGAACGTGGTCCCTACGACGGCGTGGTAAATGGCTCAGCTGCTCCGGATC
CTATACTACTACTTGACCAGGGGATGCTGCCGCAACCATTTACCAGTCCGACGAGGCCCTAG

1021 ProGlnAlaIleLeuAspMetIleAlaGlyAlaHisTrpGlyValLeuAlaGlyIleAla
CCACAAGCCATCTTGACATGATCGCTGGTGTCTCACTGGGAGTCCTGGCGGCATAGCG
GGTGTTCGGTAGAACCTGTACTAGCGAACCAAGTGAACCCCTCAGGACCGCCCGTATCGC

1081 TyrPheSerMetValGlyAsnTrpAlaLysValLeuValLeuLeuLeuPheAlaGly
TATTCTCCATGGTGGGAACTGGCGAAGTCCCTGTAAGTGTGCTGCTATTGGCCGCC
ATAAAGAGGTACCACCCCTTGACCCGCTTCCAGGACCATCACGACGACGATAAACGGCCG

1141 ValAspAlaGluThrHisValThrGlyGlySerAlaGlyHisThrValSerGlyPheVal
GTCGACGGCGAAACCCACGTCACCGGGGAAGTGGCCGCACACTGTGTCTGGAATTGT
CAGCTGCCGCTTTGGGTGCAGTGGCCCCCTTCACGGCGCGGTGTGACACAGAACCTAAACAA

1201 SerLeuLeuAlaProGlyAlaLysGlnAsnValGlnLeuIleAsnThrAsnGlySerTrp
AGCCTCCTCGCACACGCGCCAGCAGAACGTCACGCTGATCAACACCAACGCGCAGTTGG
TCGGAGGAGCGTGTCCCGCGTTCGTCTTGACAGGTGCACTAGTTGTGTGTCGCCGTCACAC



FIG. 72E

1261 HisLeuAsnSerThrAlaLeuAsnCysAsnAspSerLeuAsnThrGlyTrpLeuAlaGly
CACCTCAATAGCACGCGCCCTGAACTGCAATGATAGCCTCAACACCGCGCTGGCAGGG
GTGGAGTTATCGTGCCGGGACTTGACGTTACTATCGGAGTTGTGGCCGACCAACCGTCCC

1321 LeuPheTyrHisHisLysPheAsnSerSerGlyCysProGluArgLeuAlaSerCysArg
CTTTTCTATCACCACAGTTCAACTCTTCAGGCTGTCTGAGAGGCTAGCCAGCTGCCGA
GAAAGATAGTGGTGTTCAGTTGAGAAGTCCGACAGGACTCTCCGATCGGTGACGGCT

1381 ProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTyrAlaAsnGlySerGlyPro
CCCTTACCGATTTCACCCAGGCGTGGGCCCTATCAGTTATGCCAACGAGCGGCCCC
GGGAATGGCTAAAACTGGTCCCGACCCCGGATAGTCAATACGGTTGCCCTTCCCGGGG

1441 AspGlnArgProTyrCysTrpHisTyrProProLysProCysGlyIleValProAlaLys
GACCAGCGCCCTACTGCTGCGCACTACCCCAAAACCTTGCGGTATGTGCCCGGAAG
CTGTCGCGGGGATGACGACCGGTGATGGGGGTTTGGAACGCCATACACGGCGCTTC

1501 SerValCysGlyProValTyrCysPheThrProSerProValValGlyThrThrAsp
AGTGTGTGTGCTCCGGTATATTTGCTTCACCTCCAGCCCCGTGGTGGTGGAAACGACCGAC
TCACACACACACGAGGCCATATAACGAAGTGAGGCTCGGGGCAACCAACCTTGTGCTG

1561 ArgSerGlyAlaProThrTyrSerTrpGlyGluAsnAspThrAspValPheValLeuAsn
AGGTCGGGCGCGCCACCTACAGCTGGGGTGAATAATGATACGACGCTTTCGTCCTTAAC
TCCAGCCCCGCGGGGTGATGTGACCCCACTTTACTATGCTGACAGAGCAGGAATTG



FIG. 72F

1621 AsnThrArgProProLeuGlyAsnTrpPheGlyCysThrTrpMetAsnSerThrGlyPhe
 AATACCAGGCCACCGCTGGCAATTGGTTGGTTGTTACCTGATGAACCTCACTGATTC
 TTATGGTCCGGTGGCGACCCGTTAACCAAGCCAACATGACCTACTTGAGTTGACCTAAG
 1681 ThrIysValCysGlyAlaProProCysValIleGlyGlyAlaGlyAsnAsnThrLeuHis
 ACCAAGTGTGCGGAGCGCCCTTGTTGTCATCCGAGGGGGCGGCAACACACCCCTGCAC
 TGGTTTCACACGCCCTCGCGGAGGAACACAGTAGCCCTCCCCCGCTTGTGTGGACGTG
 1741 CysProThrAspCysPheArgLysHisProAspAlaThrTyrSerArgCysGlySerGly
 TGCCCCACTGATTCCTCCGCAAGCATCCGGACGCCACATACCTCTCGGTGCGGCTCCGT
 ACGGGGTGACTAACGAAGCGCTTCGTAGGCCCTGCGGTGTATGAGGCCACGCCGAGGCCA
 1801 ProTrpLeuThrProArgCysLeuValAspTyrProTyrArgLeuTrpHisTyrProCys
 CCTGGATCACACCCAGGTGCCCTGCTGCATACCCGTATAGCCTTTGGCATTATCCTGT
 GGGACCTAGTGTGGTCCACGGACCGACTGATGGGCATATCCGAAACCGTAATAGGAACA
 1861 ThrIleAsnTyrThrIlePheLysIleArgMetTyrValGlyGlyValGluHisArgLeu
 ACCATCAACTACACCATATTTAAATCAGGATGTACGTGGAGGGGTGAAACACAGGCTG
 TGGTAGTTGATGTGGTATAAATTTAGTCTTACATGCACCCCTCCAGCTTGTGTCCGAC
 1921 GluAlaAlaCysAsnTrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSer
 GAAGCTGCCCTGCAACTGACGCGGGCGAACGTTGCCATCTGAAGACAGGACAGGTCC
 CTTGCACGGACGTTGACCTGCGCCCGCTTGCAACGCTAGACCTTCTGTCCCTGTCCAGG
 1981 GluLeuSerProLeuLeuLeuThrThrGlnTrpGlnValLeuProCysSerPheThr
 GAGCTCAGCCCCGTTACTGCTGACCACTACACAGTGGCAGGTCCTCCGTTCTTCACAC
 CTCGAGTCGGGCAATGACGACTGGTGATGTGTACCCGTCAGGAGGGCACAAAGGAAGTGT



FIG. 72G

2041 ThrLeuProAlaLeuSerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGln
 ACCCTACCAGCCTTGTCCACCGGCTCATCCACCCTCCACGACATGTGGACGTGCAG
 TGGATGGTCCGAACAGGTGGCCCGAGTAGGTGAGGTGGTCTTGTAAACACCTGCACGTC

2101 TyrLeuTyrGlyValGlySerSerIleAlaSerTrpAlaIleLysTrpGluTyrValVal
 TACTTGTAACGGGGTGGGGTCAAGCATCGCGTCTGGGCCATTAACTGGAGTACGTCGTT
 ATGAACATGCCCCACCCCAAGTTCTGTAGCCGACGACCCCGGTAATTCAACCTCATGCACCAA

2161 LeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeu
 CTCCTGTTCCTTCTGCTTGACAGACGCGCGCTCTGCTCTGCTTGATGATGATGCTACTC
 GAGGACAAGGAAGACGAACGTCTGCGCGCGCAGACGAGACGAACACCTACTACGATGAG

2221 IleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAla
 ATATCCCAAGCGAGCGCGCTTGGAGAACCTCGTAATACTTAATGCAGCATCCCTGGCC
 TATAGGGTTGCGCTCCGCCGAACCTCTTGGAGCATTAATGAATTACGTCGTAGGGACCGG

2281 GlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrpTyrLeuLysGly
 GGGACGCACGGTCTGTATCCCTTCCTGCTGTTCTTCTTGCAATGATATTGAAGGGT
 CCTGCGTGCAGAACATAGGAAGGACCAAGAACGAACGTAACCATAACTTCCA

2341 LysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeuLeuLeuLeuLeu
 AAGTGGTGCCCGAGCGGTCTACACCTTCTACGGGATGTGGCTCTCCTGCTCCTG
 TTCACCCACGGGCTCGCCAGATGTGAAGATGCCCTACACCGGAGAGGAGACGAGGAC



FIG. 72H

2401 LeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAlaSerCysGlyGly
TTGGCGTTGCCCCAGCGGGCGTACGGCTGGACACGAGGTGGCCGCTGTTGGCGGT
AACCGCAACGGGGTCCGCCGATGGCGGACCTGTGCCCTCCACCGCGCAGCACACCGCCA
2461 ValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrIleSer
GTTGTTCTCGTCGGGTGATGGCGCTGACTCTGTCAACCATATTACAGCGCTATATCAGC
CAACAAGAGCAGCCCCAAGTACCGGACTGAGACAGTGGTATATGTTCGGCATATAGTCCG
2521 TrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHisValTrp
TGGTGTCTTGTGGTGGCTTCAGTATTTCTGACCAGAGTGAAGCGCACTGCACGTGTGG
ACCAAGAACACACCGAAGTCAATAAAGACTGGTCTCACCTTCCGCTTGACGTGCACACC
2581 IleProPLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeuMetCysAlaVal
ATTCCCCCTCAACGTCGAGGGGGCGCGGACCGCTCATCTTACTCATGTGTGTGTA
TAAGGGGGGAGTTGCAGGCTCCCCCGGCTGCGGAGTAGAATGAGTACACACGACAT
2641 HisProThrLeuValPheAspIleThrIleLeuLeuAlaValPheGlyProLeuTrp
CACCGACTCTGGTATTTGACATCACCAATTTGCTGTGGCCGCTTCGACCCCTTTGG
GTGGCTGAGACCATAAACTGTAGTGTTAACGACGACCGGCAGAACCTGGGGAACCC
2701 IleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGlnGlyLeuLeuArg
ATTCTTCAAGCCAGTTTGTCTTAAAGTACCCTACTTTGTGGCGGTCCAGGCCCTTCTCCGG
TAAGAAGTTCGGTCAACGAATTTCAATGGGATGAACAACGCGCAGGTTCCGGAAGAGGCC

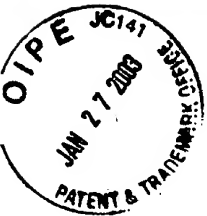


FIG. 721

2761 pheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMetValIleIleLys
TTCTGCGCGTTAGCGCGGAGAGATGATCGAGGCCATTACGTGCAATGTGTCATCATTAAG
AAGACGCGCAATCGCGCCTTCTACTAGCCTCCGGTAATGCACGTTTACCAGTAGTAATTC
2821 LeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTyrAla
TTAGGGCGGCTTACTGGCACCTATGTTTATAACCATCTCACTCCTCTTCGGGACTGGCGG
AATCCCCCGCAATGACCGGTGATACAAATATTGGTAGAGTGAGAGAGAAGCCCTGACCCCGC
2881 HisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPheSerGlnMetGlu
CACACGCGCTTGGAGATCTGGCCGTGCTGTAGAGCCAGTCGCTCTCCCAAATGGAG
GTGTTGCCGAACGCTCTAGACCGGCACCGACATCTCGGTCAGCAGAAGAGGTTTACCCTC
2941 ThrLysLeuIleThrTyrGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeu
ACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGCGGTGACATCATCAACGGCTTG
TGGTTCGAGTAGTGCACCCCGCTCTATGGCGGGCCAGCCCACTGTAGTAGTTGCCGAAC
3001 ProValSerAlaArgArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSer
CCTGTTTCCGCCCCGAGGGCGCGGAGATACTGCTCGGGCCAGCCGATGGAATGCTCTCC
GGACAAAGCGGGCGGTCCCGCCCTCTATGACGAGCCCGGTGCTACCTTACCAGAGG
3061 LysGlyTyrPargLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeu
AAGGGGTGAGGTTGCTGGCGCCCATCACGGCGTACGCCCAGCAGACAAAGGGGCTCCTA
TTCCCCACCTCCAAAGCAGCGGGGTAGTGCAGCATGGGGTCTGTTTCCCGGAGGAT
3121 GlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGln
GGGTGCATATCACCGACCTAATGCGCGGAGCAAAACCAAGTGAGGGTGAGGTCCAG
CCCACGTATTAGTGGTCCGATTGACCGGCCCTGTTTGTGTTTCACTCCCACTCCAGGTC



FIG. 72J

3181 ILeValSerThrAlaIaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThr
 ATGTGTCAACTGCTGCCAAACCTTCTCGGCAACGTGCATCATGGGTGTGCTGACT
 TAACACAGTTGACGACGGGTTTGAAAGGACCGTTGCACGTAGTTACCCCAACGACCTGA
 3241 ValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyProValIleGlnMet
 GTCTACCAACGGGGCCGGAACGAGGACCATCGCGTCACCCAAAGGTCCTGTCAATCCAGATG
 CAGATGGTGCCCCCGCCTTGCTCTGTTAGCGCAGTGGGTTCCAGAGACAGTAGTCTTAC
 3301 TyrThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeu
 TATACCAATGTAGACCAAGACCTTGTGGGCTGGCCCCGCTCCGCAAGGTAGCCGCTCATTTG
 ATATGGTTACATCTGGTTCTGGAACACCCGACCGGGCGAGCGCTTCCATCGCGGAGTAAC
 3361 ThrProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIle
 ACACCCCTGCACCTTGGCGCTCTCGGACCTTACCTGTGTCACGAGCACGCCGATGTCAATT
 TGTGGACGTGAACGCCGAGGACCTGGAATGACCACTGCTCCGTGCGGCTACAGTTAA
 3421 ProValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyr
 CCCGTGCGCGCGGGGGGTGATAGCAGGGGCAGCCTGCTGTGCCCCGCCCATTTCCCTAC
 GGGCACGCGCGCGCCCCACTATCGTCCCCGTGCGACGACAGCGGGCGCGGTAAAGGATG
 3481 LeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePhe
 TTGAAGAAGCTCCTCGGGGGGTCCGCTGTGTGCCCCCGGGGCACGCCGTGGCATATTT
 AACTTTCCGAGGAGCCCCCCAGCGACACACGCGGGCGCCCCGTGCGGCACCCGTATATAA
 3541 ArgAlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIleProValGluAsn
 AGGGCGCGCGGTGTGCACCCGTGAGTGCTAAGGCGGTGACCTTATCCCTGTGAGAGAAC
 TCCCGGCGCCACACGTGGGCACTCACCGATTCCGCCACCTGAATAATAGGACACCTCTTG

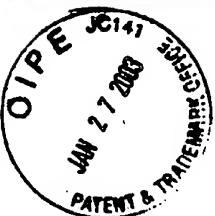


FIG. 72K

3601 LeuGluThrThrMetArgSerProValPheThrAspAsnSerSerProProValValPro
CTAGAGACACACCATGAGTCCCGGTGTTACGCGATACTCTCCACAGTAGTGCCC
GATCTCTGTGTGTTACTCCAGGGGCCACAAGTGCCTATTGAGAGAGAGTGTGTCATCACGGG

3661 GlnSerPheGlnValAlaHisLeuHisAlaProThrGlySerGlyLysSerThrLysVal
CAGAGCTTCCAGGTGGCTCACCCTCCATGCTCCACAGGCGAGCGGCAAAAGCACCAAGGTC
GTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGCTTTCGTTGCTTCCAG

3721 ProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsnProSerValAlaAla
CCGGCTGCATATGCAGCTCAGGCTATAGTGCTAGTACTCAACCCCTGTGCTGCA
GGCCGACGTATACGTCGAGTCCCGATATTCCACGATCATGAGTTGGGAGACCAACGACGT

3781 ThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThr
ACACTGGGCTTTGGTCTTACATGTCAGGCTCATGGGATCGATCCTAACATCAGGACC
TGTGACCCGAACCAACGAATGTACAGGTTCCGAGTACCCTAGCTAGGATTGTAGTTCCTGG

3841 GlyValArgThrIleThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeu
GGGCTGAGAACATTTACCACTGGCAGCCCCCATCAGTACTCCACCTACGGCAAGTTCCTT
CCCCACTCTTGTTAATGGTGACCGCTGGGGTAGTGCAATGAGGTGATGCCGTTCAAGGAA

3901 AlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIleCysAspGluCysHisSer
GCCGACGGCGGGTGTCTGGGGGGCGCTTATGACATATAATTTGTGACGAGTGCCACTCC
CGGCTGCCGCCACGAGCCCCCGCGAATACTGTATTATTAAACACTGCTCAGCGTGAGG

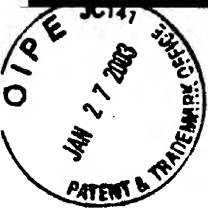


FIG. 72L

3961 ThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGly
ACGGATGCCACATCCATCTTGGCATCGGCACTGCTTGACCAAGCAGAGACTGGGGG
TGCCTACGGGTAGGTAGAACCCTAGCCGTGACAGGAACGTGTGCTCTGACGCCCC
4021 AlaArgLeuValValLeuAlaThrAlaThrProProGlySerValThrValProHisPro
GGGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTCCGTCACTGTGCCCATCCC
CGCTCTGACCAACACGAGCGGTGGCGGTGGGAGGCCCGAGGCAGTGACACGGGGTAGGG
4081 AsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIle
AACATCGAGGAGGTGCTCTGTCCACCAACCGAGAGATCCCTTTTACGGCAAGGCTATC
TTGTAGCTCCCTCCAACGAGACAGGTGGTGGCTCTCTAGGGAATAATGCCGTTCCGATAG
4141 ProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHisSerLysLysCys
CCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTTCTGTCATTCAAGAAGAGTGC
GGGAGCTTCATTAGTTCCCCCCCCCTCTGTAGAGTAGAAGACAGTAAGTTCTTCTTCACG
4201 AspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGly
GACGAACCTGCCCGCAAGCTGCTGCATTGGGCATCAATGCCGTGGCTTACTACCGCGGT
CTGCTTGAGCGCGTTTCGACCAGCGTAACCCGTAGTTACGGCACCGGATGATGGCCCA
4261 LeuAspValSerValIleProThrSerGlyAspValValValValAlaThrAspAlaLeu
CTTGACGTGTCCGTCAATCCCGACCAAGCGCGCATGTGTGTCGTGGCAACCGATGCCCTC
GAACTCACAGGAGTAGGGCTGGTGGCGGCTACACACAGCACACCGTTGGCTACGGGAG

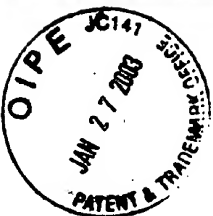


FIG. 72M

4321 MetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThrCysValThrGln
 ATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGCATATACGTGTGCACCCAG
 TACTGGCCGATATGGCCCGCTGAAGCTGAGCCACTATCTGACGTATATGCACACAGTGGCTC

4381 ThrValAspPheSerLeuAspProThrPheThrIleGluThrIleThrLeuProGlnAsp
 ACAGTCGATTTCAGCCTTGACCTTACCCTTACCATTGAGACAAATCAGCGCTCCCCAGGAT
 TGTCAAGCTAAAGTCGGAACCTGGGATGGAGTGTAACCTCTGTAGTGGCAGGGGGTCCCTA

4441 AlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArg
 GCTGTCCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGAAGCCAGGCATCTACAGA
 CGACAGAGGGCGGTGAGTTGCAGCCCCGCTCCTGACCGTCCCCCTTCGGTCCGTAGATGTCT

4501 PheValAlaProGlyGluArgProSerGlyMetPheAspSerSerValLeuCysGluCys
 TTGTGGCACCGGGGAGCGCCCCCTCCGCAATGTTGACTGCTCCGTCTGTGAGTGC
 AAACACCGTGGCCCCCTCGCGGGGAGCGCGTACAAGCTGAGCAGGCAGAGACACTCACG

4561 TyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThrThrValArgLeuArg
 TATGACGCGAGGCTGTGCTGTGATGAGCTCACGCCCGCCGAGACTACAGTTAGGCTACGA
 ATACTGCCGTCCGACACGAACCATATCTGAGTGGCGGGGCTCTGATGTCAATCCGATGCT

4621 AlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeuGluPheThrGluGly
 GCGTACATGAACACCCCCGGGGCTTCCCGTGTGCCAGGACCATTGAATTTGGGAGGGC
 CGCATGTACTTGTGGGGCCCCGGAAGGGCACACGGTCTCTGTAGAACTTAAAAACCTCCCG

4681 ValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGly
 GTCTTACAGGCGCTCACTCATATAGATGCCCACTTCTATCCAGACAAAGCAGAGTGGG
 CAGAAATGTCCGGAGTGAATATATCTACGGGTGAAGAATAGGGTCTGTTCGCTCACACC



FIG. 72N

4741 GluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaPro
 GAGAACCTTCCCTTACCTGGTAGCGGTACCAGCCACCGTGCGCTAGGGCTCAAGCCCT
 CTCTTGGAAGGAATGGACCATCGCATGGTTCCGGTGGCACACCGCATCCGAGTTCGGGGA

 4801 ProProSerTyrPaspGlnMetTrrPlyScysLeuIleArgLeuLysProThrLeuHisGly
 CCCCCTATCGTGGGACAGATGTGGAAGTGTGATTGCTCAAGCCACCCCTCATGGG
 GGGGTAGCACCCCTGGTCTACACCTTCACAACCTAAGCGGAGTTCGGGTGGAGGTACCC

 4861 ProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisPro
 CCAACACCCCTGCTATACAGACTGGCGCTGTTCAGAAAGAAATCACCCCTGACGACCCCA
 GGTGTGGGACGATATGTCTGACCCCGCAAGTCTTACTTTAGTGGACTGCGTGGGT

 4921 ValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluValValThrSerThrTrp
 GTCACCAAAATACATCATGACATGATGTCGGCCGACCTGGAGGTGTCACGAGCACCTGG
 CAGTGGTTATGTAGTACTGTACTGACGACCCGGCTGGACCTCCAGCAGTGTCTGTGACC

 4981 ValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeuSerThrGlyCysVal
 GTGCTCGTTGGCGGCGCTCGCTGGCTTTGGCCGCGGTATTGCTGTCAACAGGCTGCGTG
 CACGAGCAACCGCGCCGACGAGACCGAAGAAACCGCGCATTAACGGACAGTTGTCCGACGCAC

 5041 ValIleValGlyArgValValLeuSerGlyLysProAlaIleIleProAspArgGluVal
 GTCATAGTGGGACAGGCTCGTCTGTCCGGAAGCCGCAATCATATACCTGACAGGAAATC
 CAGTATCACCCGCTCCACAGCAGAACAGGCCCTTCGGCCGTTAGTATGACTGTCCCTTCAG

 5101 LeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGln
 CTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACCTTACCGTACATCGAGCAA
 GAGATGGCTCTCAAGCTACTCTACCTTCTCACGAGAGTGTGAATGGCATGTAGCTCGTT

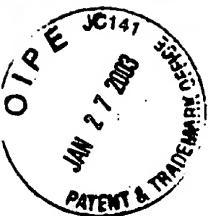


FIG. 720

5161 GlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSer
GGATGATGCTCGCCGAGCAGTTCAGACGAGAGCCCTCGGCTCCTGCAGACCGGCTCC
CCCTACTACGAGCGGCTCGTCAAGTTCGTTCCGGGAGCCGGAGGACGCTCGGCGCAGG

5221 ArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPhe
CGTCAGGCAGAGGTTATCGCCCTGCTGTCAGACCACTGGCAAAACTGAGACCTTC
GCAGTCCGCTCTCCAATAGCGGGGACGACAGGCTCTGGTTGACCGTTTGTGAGCTCTGAAG

5281 TrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAlaGlyLeuSerThr
TGGCGAAGCATATGTGAACTTCATCAGTGGGATACAAATACTGGCGGCTTGTCACG
ACCCGCTTCGTATACACCTTGAAGTAGTCAACCTATGTATGAACCGCCCGAACAGTTGC

5341 LeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerPro
CTGCCGTGGTAACCCCGCCCATTTGCTTCAATGATGGCTTTTACAGCTGCTGCACCAAGCCCA
GACGGAACCATTTGGGGCGGTAACGAAGTAACCGAAATGTGACGACGACGAGTGGGCT

5401 LeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnLeu
CTAACCACTAGCCAAACCCCTCCTTCAACATATTTGGGGGGGTGGGTGGCTGCCAGCTC
GATTGCTGATCGGTTTGGGAGGAGAAGTTGTATAACCCCCCAACCGACGAGGGGTGAG

5461 AlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGly
GCCGCCCCGGGTGGCTACTGCCCTTTGTGGCGCTGCTTAGCTGGCGCCCATCGGC
CGCGGGGGCCACGGCGATGACGGAACACCCCGACCGAATCGACCGCGGCTAGCCG



FIG. 72P

5521 SerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAla
AGTGTGGACTGGGGAAGTCCATAGACATCCTTGCAGGGTATGGCGGGCGTGGCG
TCACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCCATACCGCGCCGCCACCGC
5581 GlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSerThrGluAspLeuVal
GGAGCTCTTGTGGCATTCAGATCATGAGCGGTGAGTCCCTCCACGGAGACCTGGTC
CCTCGAGAACACCGTAAGTCTTAGTACTCGCCCACTCCAGGGAGGTGCCCTCTGGACCAG
5641 AsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGlyValValCysAlaAla
AATCTACTGCCCGCCATCTCTCGCCGGAGCCCTCGTAGTCGGCGTGTCTGTGCAGCA
TTAGATGACGGCGGTAGGAGAGCGGCCCTCGGAGCATCAGCCGACCAAGACACGTCTGT
5701 IleLeuArgArgHisValGlyProGlyGluGlyAlaValAlaGlnTrpMetAsnArgLeuIle
ATACTGCGCGCGGACCGTTGGCCCGGGCGAGGGGGCAGTGCAGTGAATGAACCGGCTGATA
TATGACGGCGCGGTGC AACCGGGGCCGCTCCCGTCAACCTACTTGGCCGACTAT
5761 AlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrValProGluSerAspAla
GCCCTCGCCTCCCGGGGAACCATGTTTCCCCACGCACTACGTGCCGAGAGCGATGCA
CGGAAGCGGAGGCCCTTGTGTACAAAGGGGTGCGTGATGCACGGCCCTCTCGCTACGT
5821 AlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeu
GCTGCCCGCGTCACTGCCATACTCAGCAGCCCTCACTGTAACCCAGCTCTGAGGCGGACTG
CGACGGGCGCAGTGACGGTATGAGTCTGCGAGTGACATTTGGGTGAGGAGCTCCGCTGAC

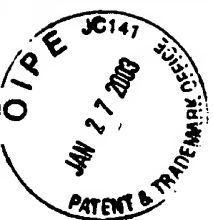


FIG. 72Q

5881 HsGlnTrpIleSerSerGluCysThrThrProCysSerGlySerTrpLeuArgAspIle
 CACCAGTGATAGCTCGAGTGATACCATCTCATGCTCCGGTTCTCGCTAAGGACATC
 GTGGTCACCTATTTCGAGCCCTACATGGTGAGGTACGAGGCCAAGACCATTCCCTGTAG

 5941 TrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMet
 TGGACTGGATATGCGAGGTGTGAGCGACTTTAAGACCTGGCTAAAGCTAAGCTCATG
 ACCCTGACCTATACGCTCCACAACTCGCTGAAATTCTGGAACCGATTTTTCGATTTCGAGTAC

 6001 ProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArg
 CCACAGCTGCCCTGGGATCCCTTTGTGTCTGCTGCCAGCGGGGTATAGGGGCTCGCGA
 GGTGTCGACGGACCCCTAGGGGAACACAGGACGGTCCGCCCATATTCCCCAGACCGCT

 6061 ValAspGlyIleMethIsthrArgCysHisCysGlyAlaGluIleThrGlyHisValLys
 GTGACGCGCATCATGCACACTCGCTGCCACTGTGAGCTGAGATCACTGCACATGTCAAA
 CACCTGCCGTAGTAGGTGTGAGCGACGGTGACACCTCGACTCTAGTGACCTGTACAGTTT

 6121 AsnGlyThrMetArgIleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPhe
 AACGGACGATGAGGATCGTGGTCTAGGACCTGCAGACATGTGAGTGGGACCTTC
 TTGCCCTGCTACTCTAGCAGGCCAGGATCCTGAGCGTCTGTGTACACCTCACCCCTGGAAG

 6181 ProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPhe
 CCCATTATATGCTACACACGAGGGGCCCTGTACCCCTTCCTGCGCGAACTACACAGTTTC
 GGGTAATTACGGATGTGTGCCCGGGGACATGGGGGAAGAGACGCGGCTTGATGTGCAAG



FIG. 72R

6241 AlaleuTrpargValSerAlaglUglUtyrValGluIleargGlnValGlyaspPheHis
GCGCTATGAGGGTGTCTGCAGAGGAATATGTGAGATAAGCAGGTGGGGACTTCCAC
CGCGATACCTCCACACAGACGTCTCCTTATACACCTCTATTCCGTCACCCCTGAAGGTG

6301 TyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGlnValProSerProGlu
TACGTGACGGGTATGACTACTGACAATCTCAATGCCCCGTGCCAGGTCCCATGCCCGAA
ATGCACCTGCCCATACTGATGACTGTAGAGTTTACGGGCACGGTCCAGGGTAGCGGGCTT

6361 PhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaProProCysLysProLeu
TTTTTACAGAAATTGACGGGGTGGCCTACATAGGTTTGGCCCCCTGCAAGCCCTTG
AAAAAGTGTCTTAACTGCCCCACGGGATGTATCCAAACGGGGGACGTTCCGGGAAC

6421 LeuArgGluGluValSerPheArgValGlyLeuHisGluTyrProValGlySerGlnLeu
CTGCGGAGGAGGTATCATTCAGAGTAGGACTCCACGAATACCCGGTAGGGTCGCAATT
GACGCCCTCCTCCATAGTAAGTCTCATCTGAGGTGCTTATGGGCCATCCACGCTTAAT

6481 ProCysGluProGluProAspValAlaValLeuThrSerMetLeuThrAspProSerHis
CCTTGGAGCCCCGAACCGGACGTGGCCGTGTGACGTCCATGCTCAGTATCCCTCCCAT
GGAACGCTCGGGCTTGGCCTGCACCGGCACAACCTGCAGGTACGAGTACGTAGGGAGGTA

6541 IleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerProProSerValAlaSer
ATAACAGCAGAGCGCGCGCGGAAGGTTGGCGAGGGGATCACCCCTCTGTGGCCAGC
TATTGTGCTCTCCGCGCGCCGCTTCCAACCGCTCCCTAGTGGGGGAGACACCGGTCG

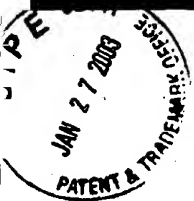


FIG. 72S

6601 SerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThrAlaAsnHisAsp
TCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCACTGCAACCGCTAACCATGAC
AGGAGCCGATCGGTCGATAGCGGAGGTAGAGAGTCCGTTGAACGTGGCGATTGGTACTG
6661 SerProAspAlaGlnLeuIleGlnAlaAsnLeuLeuTrpArgGlnGluMetGlyGlyAsn
TCCCTGTAGCTGAGCTCATAGAGGCCCACTCTCTATGAGGACAGAGATGGCGGCAAC
AGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCCGTCCTTACCCGCCGTTG
6721 IleThrArgValGlnSerGlnAsnLysValIleLeuAspSerPheAspProLeuVal
ATCACCAAGGTTGAGTCAGAAACAAGTGTGATCTTGACTCTTCGATCCGCTTGTG
TAGTGTCCCAACTCAGTCTTTTGTTCACCACTAAGACCTGAGGAAGCTAGGCCAACAC
6781 AlaGlnGluAspGlnArgGlnIleSerValProAlaGlnIleLeuArgLysSerArgArg
GCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGACAGAAATCCTGCGAAGTCTCGAGA
CGCTCTCTCTGCTCGCCCTCTAGAGGCATGGCGCTCTTTAGGACGCCCTTCAGAGCCTCT
6841 PheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProProLeuValGluThr
TTGCCCCAGGCCCTGCCGTTTGGCGCGCGGACTATAACCCCCCTAGTGAGACG
AAGCGGTCGGGACGGGCAACCCGCGCGCTGATATTGGGGGGCGCATCACCTCTGC
6901 TrpLysLysProAspTyrGlnProProValValHisGlyCysProLeuProProLys
TGGAAAAAGCCCGACTACGAACCACTGTGTCTCATGGCTGCTCCACTCCAAAG
ACCTTTTTCGGGCTGATGCTTGTGACACCAAGTACCGACAGCGGAAGGTGAGGTTTC
6961 SerProProValProProArgLysLysArgThrValValLeuThrGluSerThrLeu
TCCCTCTCTGTGCTCTCCGCTCGAAGAAGCGGACGGTGTCTCACTGAATCAACCTA
AGGGAGGACACGAGGCGGAGCCTTCTTCTGCTCCACCAAGAGTGACTTAGTTGGAT

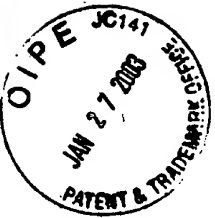


FIG. 72T

7021 SerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSerSerThrSerGlyIle
TCTACTGCCCTTGGCCGAGCTCGCCACCAGAAGCTTTGGCAGCTCCTCAACTTCCGGCATTT
AGATGACCGAACC GGCTCGAGCGGTGGTCTTCGAAACCCTCGAGGAGTTGAAGGCCGTAA

7081 ThrGlyAspAsnThrThrThrSerSerGluProAlaProSerGlyCysProProAspSer
ACGGCGCAATACGACACACATCCTCTGAGCCCCCTCTGGCTGCCCCCCGACTCC
TGCCCGCTGTTATGCTGTTAGGAGACTCGGGCGGGGAAGACCGAGCGGGGCTGAGG

7141 AspAlaGluSerTyrSerSerMetProProLeuGluGlyGluProGlyAspProAspLeu
GACGCTGAGTCTTATTCCTCCATGCCCCCTGAGGGGAGCCTGGGATCCGGATCTT
CTGCGACTCAGGATAAGAGGAGTACGGGGGACCCTCCCCCTCGGACCCCTAGGCCGTAGAA

7201 SerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGluAspValValCysCys
AGCGACGGGTCAATGTCACAGGTCAGTAGTGAGGCCACGCGGAGGATGTCGTGCTGC
TCGCTGCCAGTACCAGTTCACATCACTCCGGTTGCGCTCTTACAGACACAGCAGC

7261 SerMetSerTyrSerThrGlyAlaLeuValThrProCysAlaAlaGluGluLys
TCAATGTCCTTACTCTTGACAGCGGCACTGTCACCCCGTGGCCGCGAAGACAGAAA
AGTTACAGAATGAGAACCCTGTCGGGTGAGCAGTGGGGCACGGGGCCCTTCTTGTCTTT

7321 LeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHisAsnLeuValTyrSerThr
CTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTCAACCAATTGGTGATTTCCACC
GACGGGTAGTTACGTGATTCGTTGAGCAACGATGAGTGTGTTAAACCATATAAGGTGG



FIG. 72U

7381 ThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAspArgLeuGlnValLeu
 ACCTCACGCGAGTGGCTTGCCCAAGGCGAGAGAAGATCACAATTGACAGACTGCAGATTCTG
 TGGAGTGGCTCACGAACGGTTTCCGTTCTTCTTCAAGTGAACCTGCTGACGTTCAAGAC

7441 AspSerHisTyrGlnAspValLeuLysGlnValLysAlaAlaAlaSerLysValLysAla
 GACAGCCATTACGAGGACGTAAGGAGGTTAAAGCAGCGCGCTCAAAAGTGAAGGCT
 CTGTCGGTAATGGTCCCTGCATGAGTTCTCCAATTTCGTGCGCCGACGTTTCACTTCCGA

7501 AsnLeuLeuSerValGlnGluAlaCysSerLeuThrProProHisSerAlaLysSerLys
 AACTGCTATCCGTTAGAGGAGCTTGCAGCTGACGCCCCCACAACCTCAGCCAAATCCAG
 TTGAACGATAGGCATCTCCTTCGAACGTCGACTGCGGGGGGTGAGTCGGTTTAGGTTT

7561 PheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLysAlaValThrHisIleAsn
 TTTGGTTATGGGGCAAAAGACGTCGTTGCCATGCGCAGAAAGCGGTAAACCCACATCAAC
 AAACCAATACCCCGTTTCTGACAGGCAACGCTACGGTCTTCCGGCATTGGGTGAGTTTG

7621 SerValTrpLysAspLeuGlnuAspAsnValThrProIleAspThrThrIleMetaIa
 TCCGTGTGGAAGACCTTCTGGAAGACAATGTACACCAATAGACACTACCATCATGGCT
 AGGCACACCTTTCTGGAAGACCTTCTGTACATTGTGTTATCTGTGATGTTAGTACCGA

7681 LysAsnGlnuValPheCysValGlnProGlnLysGlyGlyArgLysProAlaArgLeuIle
 AAGAACGAGGTTTCTGCTGCTCAGCCTGAGAAAGGGGGTGTAGCCAGCTGCTCATTC
 TTCTTGTCTCCAAAGACGCAAGTCGACTCTTCCCCCAGCATTCGGTGCAGCAGAGTAG

7741 ValPheProAspLeuGlyValArgValCysGlnLysMetAlaLeuTyrAspValValThr
 GTGTTCCCCGATCTGGGGCTGCGGCTGTGCGAAAGATGGCTTTGTACGACGTTGTTACA
 CACAAGGGGCTAGACCCGCGACGCGCACACGCTTTTCTACCGAAACATGCTGCACCAATGT



FIG. 72V

7801 LysLeuProLeuAlaValMetGlySerSerTyrGlyPheGlnTyrSerProGlyGlnArg
AAGCTCCCTTGCGCGTGATGGGAAGCTCCCTACGATTCACAATACTCACCAGACAGCGG
TTCGAGGGGAACCGGCACCTACCCTTCGAGGATGCCCTAAGGTTATGAGTGGTCTCGGCC
7861 ValGluPheLeuValGlnAlaTrrPlySerLysLysThrPrometGlyPheSerTyrAsp
GTTGAATTCCCTCGTGCAAGCGTGGAAGTCCAAGAAAACCCCAATGGGTTCTCGTATGAT
CAACTTAAGGAGCACGTTTCGCACCTTCAGGTTCTTTGGGGTTACCCCAAGACATACTA
7921 ThrArgCysPheAspSerThrValThrGluSerAspIleArgThrGluGlnAlaIleTyr
ACCGGCTGCTTTGACTCCACAGTCAGTGAAGCGACATCCGTACGAGAGGCAATCTAC
TGGCGGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGCCCTCCGTTAGATG
7981 GlnCysCysAspLeuAspProGlnAlaArgValAlaIleLysSerLeuThrGluArgLeu
CAATGTTGTGACCTCGACCCCAAGCCCGGTGGCCATCAAGTCCCTCACCAGAGGCTT
GTTACAACACTGAGCTGGGGGTTGGGGCCACCGGTAGTTCAAGGAGTGGCTCTCCGAA
8041 TyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnGlyTyrArgArgCysArg
TATGTTGGGGGCCCTCTTACCAATTCAGGGGGGAGAACTGCGGCTATCGCAGGTGCCCGC
ATACAAACCCCGGAGAAATGTTAGTTCCCCCTCTTGACGCCGATAGCGGTCCACGGCG
8101 AlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArg
GCGAGCGGCGTACTGACAACTAGCTGTGTTAACACCCCTCACTTGCTACATCAAGGCCCCG
CGCTCGCCGATGACTGTTGATCGACACCATTTGTGGAGTGAACGATGTAGTTCCGGGCC

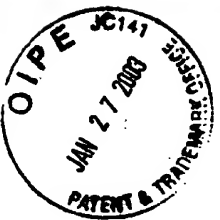


FIG. 72W

8161 AlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeu
GCAGCCTGTGAGACCGCCAGGCTCCAGACTGCACCATGCTCGTGTGTGGCAGCACTTA
CGTCGGACAGCTCGGCGTCCCGAGGTTCTGACGTGTACGAGCACACACCGCTGCTGAAT

8221 ValValIleCysGluSerAlaGlyValGlnGluAspAlaAlaSerLeuArgAlaPheThr
GTCGTTATCTGTGAAGCGCGGGGTCCAGAGAGACGCGCGGAGCCTGAGAGCCTTCACG
CAGCAATAGACACTTTCGCGCCCGCAGGTTCTCTGCGCGCTCGGACTCTCGGAAGTGC

8281 GluAlaMetThrArgTyrSerAlaProGlyAspProGlnProGluTyrAspLeu
GAGCTATGACCCAGGTACTCCGCCCCCTGGGGACCCCAACAACAGATACGACTTG
CTCCGATACTGGTCCATGAGCGGGGGGAGACCCCTGGGGGTGTGTCTTATGCTGAAC

8341 GluLeuIleThrSerCysSerSerAsnValSerValAlaHisAspGlyAlaGlyLysArg
GAGCTCATATACATCATGCTCTCCAACGTGTCACTGCCCAACGACGCGCTGGAAAGAGG
CTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGTCTGCCGCACTTTCTCC

8401 ValTyrTyrLeuThrArgAspProThrThrProLeuAlaArgAlaAlaTrpGluThrAla
GTCTACTACCTCACCCGTGACCCCTACAACCCCCCTGCGAGAGCTGCGTGAGACAGCA
CAGATGATGGAGTGGGCACCTGGATGTGGGGGAGCGCTCTCGACGCACCCCTCTGTCGT

8461 ArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMetPheAlaProThrLeuTrp
AGACACACTCCAGTCAATTCTGGCTAGGCAACATATCATGTTTGGCCCCACACTGTGG
TCTGTGTGAGGTCAGTTAAGGACCGATCCGTTGTATTAGTACAACGGGGGTGTGACACC

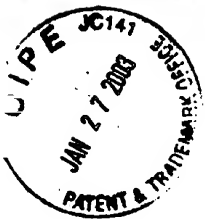


FIG. 72X

AlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAlaArgAspGlnLeuGlu
8521 GCGAGGATGATAGTATGATGACCCATTCTTTAGCGCTTATAGCCAGGAGCAGCTTGAA
CGCTCCTACTATGACTACTGGGTAAAGAAATCGCAGGAATATCGGTCCCTGGTCCAATT
8581 GlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIleGluProLeuAspLeuPro
CAGGCCCTCGATTGCGAGATCTACGGGCGCTGCTACTCCATAGAACCACTTGATCTACCT
GTCCGGGAGCTAACGCTCTAGATGCCCGGACGATGAGGTATCTTGGAAGTATGATGA
8641 ProIleIleGlnArgLeuHisGlyLeuSerAlaPheSerLeuHisSerTyrSerProGly
CCAATCATTCAAAGACTCCATGGCCCTCAGCGCATTTTCACTCCACAGTTACTCTCCAGGT
GGTTAGTAAAGTTTCTGAGGTACCGGAGTCCGCTAAAGTGAAGGTGTCAATGAGAGGTCCA
8701 GluIleAsnArgValAlaAlaCysLeuArgLysLeuGlyValProProLeuArgAlaTrp
GAAATTAAATAGGGTGGCCGCGATGCCCTCAGAAAACTGGGGTACCGCCCTTGCGAGCTTG
CTTTAATTATCCCAACCGCGGTACGAGTCTTTTGAACCCCATGGCGGGAACGCTCGAACCC
8761 ArgHisArgAlaArgSerValArgAlaArgLeuLeuAlaArgGlyGlyArgAlaAlaIle
AGACACCGGGGGCGGAGCGTCCGCGCTAGGCTTCTGGCCAGAGGAGCGAGGCTGCCATA
TCTGTGGCCCGGGCGCTCGCAGGCGGATCCGAAGACCGGTCTCCCTCCGACGGTAT
8821 CysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLysLeuThrProIleAla
TGTTGGCAAGTACCTCTTCAACTGGGCAGTAAAGAACAAAGCTCAAACTCACTCCAATAGCG
ACACCGTTCAATGAGAAAGTTGACCCGTCATTTCTGTGTTTCGAGTTTGAGTGAGGTTATCGC

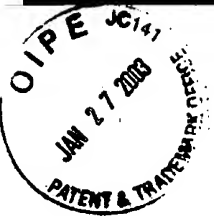


FIG. 72Y

8881
AlaAlaGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyrSerGlyGlyAspIle
GCCGCTGGCCAGCTGACTGTGCCGCTGTTCAACGGCTGCTACAGCGGGGAGACATT
CGCGACCCGGTCGACCTGAACAGGCCGACCAAGTCCGACCGATGTGCCCCCTCTGTAA

8941
TyrHisSerValSerHisAlaArgProArgTyrIleTyrPheCys
TATCACAGCGTGTCTCATGCCCCCGCCCTGGATCTGGTTTGCCC
ATAGTGTCCACAGAGTACGGGGCGGGCGACCTAGACCAAAACGGG





1 GluPheGlySerValIleProThrSerGlyAspValValValAlaThrAspAlaLeu
GAATTCGGGTCCGTCATCCCGACCAGCGGCGATGTTGTCGTCGTGGCAACCGATGCCCTC
CTTAAGCCCAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCACCGTTGGCTACGGGAG
1 ECOR1, 7 NLAIIV, 8 AVA2 SAU96, 15 FOK1, 24 NSPB11, 26 FNU4H
1, 52 SFAN1, 57 MNL1, 60 NLAI11,
61 MetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThrCysValThrGln
ATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGCAATACGTGTGTACCCAG
TACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTATGCACACAGTGGGTC
65 HPA11, 74 HPA11, 83 TAQ1, 85 HINF1, 90 HPH, 106 AFL111 MA
E2, 112 MAE3, 113 HPH,
121 ThrValAspPheSerLeuAspProThrPheThrIleGluThrIleThrLeuProGlnAsp
ACAGTCGATTTCAGCCTTGACCCCTACCTTCACCATGAGACAATCACGCTCCCCAAGAT
TGTCAGCTAAAGTCGGAAGTGGGATGGAAGTGGAAGTCTGTTAGTGCGAGGGGGTTCTA
125 TAQ1, 149 HPH, 178 SFAN1,
181 AlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArg
GCTGTCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGAAGCCAGGCATCTACAGA
CGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGACCGTCCCCCTTCGGTCCGTAGATGTCT
198 MAE2, 226 ECOR11 SCRF1, 230 SFAN1,
241 PheValAlaProGlyGluArgProProAlaCysSerThrArgProSerSerValSerAla
TTTGTGGCACCGGGGGAGCGCCCTCCGGCATGTTGACTCGTCCGTCCTCTGTGAGTGCC
AAACACCGTGGCCCCCTCGCGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGG
246 BAN1 NLAIIV, 250 HPA11 NC11 SCRF1, 257 HAE11, 258 HHA1, 2
62 MNL1, 265 HPA11, 268 NSPC1, 269 NLAI11, 274 TAQ1, 276 HIN
F1, 287 MNL1, 296 BSP1286,
301 ArgIle
CGAATTC
GCTTAAG
302 ECOR1,
361

FIG. 74

FIG. 75

-----Overlap with 6k-----
1 TyrHisSerValSerHisAlaArgProArgTyrPheCysLeuLeuLeuAla
TTATCACAGCGTGTCTCATGCCCGCGCGCTGGATCTGGTTTGGCTACTCCCTTGC
AATAGTGTCCACAGAGTACGGCGCGCGCGACCTAGACCACAAACGGATGAGACGACG
61 AlaGlyValGlyIleTyrLeuLeuProAsnArgOP
TGCAGGGGTAGGCATCTACTCTCCCAACCGATGAGGTGGGTAACACTCCGGCC
ACGTCCCATCCGTAGATGAGAGGGGTTGGCTACTTCCAACCCCATTTGTGAGGCCGG
121 T
A





FIG. 76

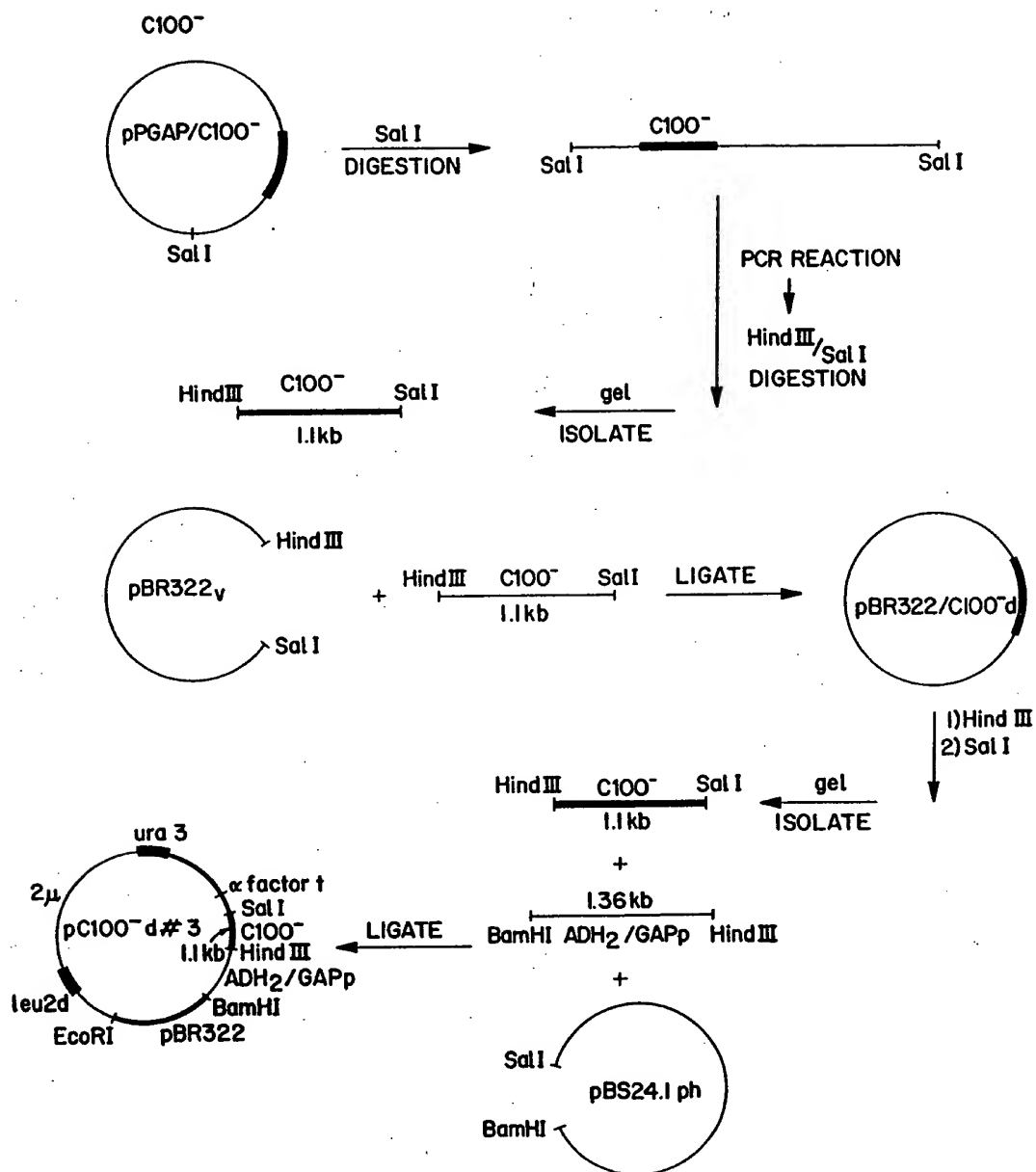
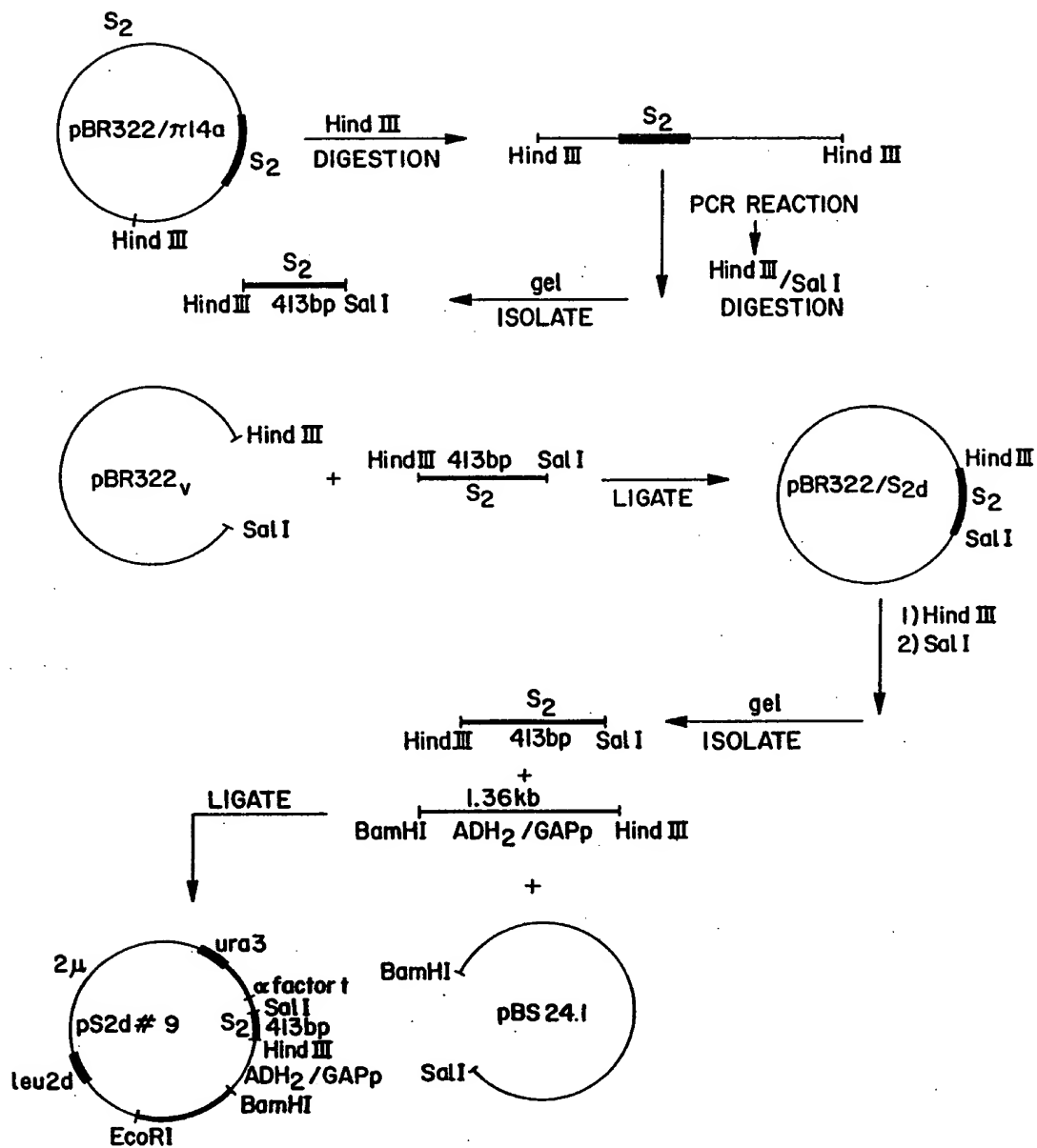




FIG. 77



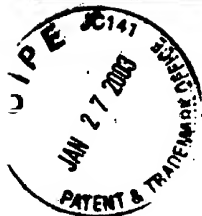


FIG. 78

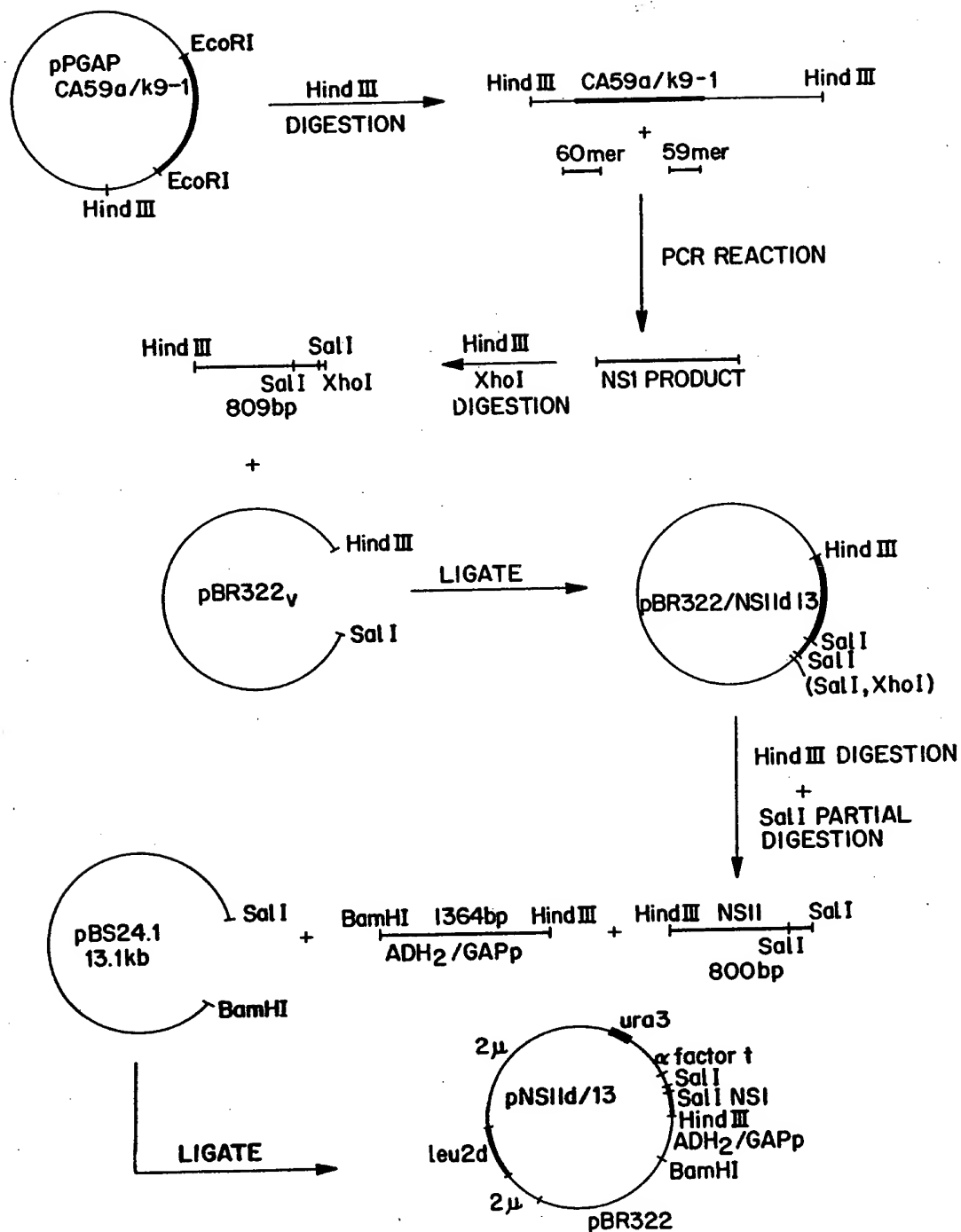




FIG. 79A

- 2 AlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThr
GCGGTGGACTTTATCCCTGTGGAGAACCCTAGAGACAACCATGAGGTCCCCGGTGTTCACG
CGCCACCTGAAATAGGGACACCTCTTGATCTCTGTGGTACTCCAGGGGCCACAAGTGC
- 29 MAE1, 40 NLA111, 43 MNL1, 45 AVA2 NLA1V SAU96, 49 NC11 SC
RF1, 50 HPA11,
- 62 AspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaPro
GATAACTCCTCTCCACCAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCC
CTATTGAGGAGAGGTGGTCATCACGGGGTCTCGAAGGTCCACCAGTGGAGGTACGAGGG
- 69 MNL1, 83 BSP1286, 92 ALU1, 97 ECOR11 SCRF1, 106 HPH, 109
MNL1, 113 NLA111,
- 122 ThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysVal
ACAGGCAGCGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTG
TGTCCTGTCGCCGTTTTCGTGGTTCCAGGGCCGACGTATACGTTCGAGTCCCGATATTCCAC
- 126 BBV FNU4H1, 127 NSPB11, 129 FNU4H1, 145 AVA2 NLA1V SAU96
, 148 NC11 SCRF1, 149 HPA11, 152 BBV FNU4H1, 156 NDE1, 161 B
BV FNU4H1, 163 ALU1, 165 DDE1,
- 182 LeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAla
CTAGTACTCAACCCCTCTGTGTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCT
GATCATGAGTTGGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCGA
- 182 MAE1, 184 SCA1, 185 RSA1, 195 MNL1, 203 BBV FNU4H1, 228
AFL111 NSPC1, 229 NLA111,
- 242 HisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIle
CATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATC
GTACCCTAGCTAGGATTGTAGTCTTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAG
- 242 NLA111, 246 BIN1, 247 MBO1 SAU3A, 248 CLA1, 249 TAO1, 25
1 BIN1 MBO1 SAU3A, 264 AVA2 SAU96, 267 HPA11 NC11 SCRF1, 271
HPH, 291 BBV FNU4H1,
- 302 ThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAsp
ACGTACTCCACCTACGGCAAGTTCCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGAC
TGATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCCCACGAGCCCCCGGAATACTG
- 302 MAE2, 304 RSA1, 340 BSP1286 HGIA, 343 AVA1, 350 HAE11, 3
51 HHA1,
- 362 IleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThr
ATAATAATTTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATTGGCACT
TATTATTAAACACTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTGA
- 372 MAE3, 391 FOK1, 392 SFAN1, 399 FOK1,
- 422 ValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrPro
GTCCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTGTGCTCGCCACCGCCACCCCT
CAGGAAGTGGTTCGTCTCTGACGCCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGA
- 431 TTHIII2, 435 ALWN1, 461 BSP1286 HGIA, 479 MNL1,



FIG. 79B

- 482 ProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGly
CCGGGCTCCGTCACGTGCCCCATCCCAACATCGAGGAGGTGCTCTGTCCACCACCGGA
GGCCCGAGGCAGTGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCT
- 482 HPA11 NC11 SCRF1, 484 BAN11 BSP1286, 485 NLA1V, 491 MAE3
, 497 BSP1286, 503 FOK1, 513 TAQ1, 515 MNL1, 518 MNL1, 537 H
PA11,
- 542 GluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeu
GAGATCCCTTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTC
CTTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCTCCCCCTCTGTAGAG
- 543 XHO2, 544 BIN1 MBO1 SAU3A, 571 MNL1, 573 TAQ1,
- 602 IlePheCysHisSerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGly
ATCTTCTGTCAATCAAAGAAGAGTGCGACGAACTCGCCGCAAAGCTGGTTCGATTGGGC
TAGAAGACAGTAAGTTTCTTCTTCACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCG.
- 603 MBO11, 619 MBO11, 638 FNU4H1, 645 ALU1, 660 SFAN1,
- 662 IleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAsp
ATCAATGCCGTGGCCTACTACCGCGGTCTTGACGTGTCCGTCATCCGACCAGCGGCGAT
TAGTTACGGCACCGGATGATGGCGCCAGAAGTGCACAGGCAGTAGGGCTGGTCCGCGCTA
- 672 HAE1, 673 HAE11, 682 NSPB11 SAC2, 683 THA1, 693 AFL111
MAE2, 703 FOK1, 712 NSPB11, 714 FNU4H1,
- 722 ValValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerVal
GTTGTCTGTCGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTG
CAACAGCAGCACCGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCAC
- 740 SFAN1, 745 MNL1, 748 NLA111, 753 HPA11, 762 HPA11, 771 T
AQ1, 773 HINF1, 778 HPH,
- 782 IleAspCysAsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThr
ATAGACTGCAATACGTGTGTCAACCCAGACAGTCGATTTTCAGCCTTGACCTACCTTCACC
TATCTGACGTTATGCACACAGTGGGTCTGTACGCTAAAGTCGGAAGTGGGATGGAAGTGG
- 794 AFL111 MAE2, 800 MAE3, 801 HPH, 813 TAQ1, 837 HPH,
- 842 IleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThr
ATTGAGACAATCAGCTCCCCAAGATGCTGTCTCCCGCACTCAACGTCGGGGCAGGACT
TAACTCTGTAGTGCAGGGGGTTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGA
- 866 SFAN1, 886 MAE2,
- 902 GlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMet
GGCAGGGGGAAGCCAGGCATCTACAGATTTGTGGCACCGGGGAGCGCCCCCTCCGGCATG
CCGTCCCCCTTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGAGGCCGTAC
- 914 ECOR11 SCRF1, 918 SFAN1, 934 BAN1 NLA1V, 938 HPA11 NC11
SCRF1, 945 HAE11, 946 HHA1, 948 BGL1, 951 MNL1, 954 HPA11, 9
57 NSPC1, 958 NLA111,
- 962 PheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThr
TTCGACTCGTCCGTCTCTGTGAGTGCTATGACGAGGCTGTGCTTGGTATGAGCTCAGC
AAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGC
- 963 TAQ1, 965 HINF1, 976 MNL1, 992 HGA1, 1003 TTH112, 1013
BAN11 BSP1286 HGIA SAC1, 1014 ALU1,



FIG. 79C

- 1051 RSA1, 1054 NLA111, 1063 AVA1 NCI1 SCRF1 SMA1, 1064 HPA1
1 NCI1 SCRF1, 1081 ECOR11 SCRF1,
- 1082 GlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHis
CAGGACCATCTTGAATTTTGGGAGGGCGTCTTACAGGCTCACTCATATAGATGCCAC
GTCCTGGTAGAACTTAAACCCCTCCCGCAGAAATGTCGGAGTGAGTATATCTACGGGTG
- 1084 AVA2 SAU96, 1103 MNL1, 1106 AHA11, 1107 HGA1, 1117 HAE1
STU1, 1118 HAE111, 1120 MNL1, 1133 SFAN1,
- 1142 PheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAla
TTTCTATCCAGACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGGTAGCGTACCAAGCC
AAAGATAGGGTCTGTTTCGTCTCACCCCTCTTGAAGGAATGACCATCGCATGGTTCGG
- 1183 ECOR11 SCRF1, 1192 RSA1, 1201 DRA3,
- 1202 ThrValCysAlaArgAlaGlnAlaProProSerTrpAspGlnMetTrpLysCysLeu
ACCGTGTGGCTAGGGCTCAAGCCCTCCCCATCGTGGGACCAGATGTGGAAGTGTGTTG-
TGGCACACGCGATCCGAGTTCGGGGAGGGGTAGCACCTGGTCTACACCTTCACAAAC
- 1209 HHA1, 1212 MAE1, 1215 BAN11 BSP1286, 1226 MNL1, 1239 NL
AlV, 1240 AVA2 SAU96, 1256 TTHIII2, 1261 HINF1,
- 1262 IleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaVal
ATTCGCCCTCAAGCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTT
TAAGCGAGTTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGACAA
- 1267 MNL1, 1279 MNL1, 1282 NCO1, 1283 NLA111, 1286 SAU96, 12
87 HAE111, 1313 HAE11, 1314 HHA1,
- 1322 GlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAla
CAGAATGAAATCACCTGACGCACCCAGTCACCAAATACATCATGACATGTCGTCGGCC
GCTTACTTTAGTGGGACTGCGTGGGTTCAGTGGTTATGTAGTACTGTACGTACAGCCGG
- 1332 HPH, 1339 HGA1, 1349 MAE3, 1350 HPH, 1363 NLA111, 1367
NSPC1, 1368 NLA111, 1369 AVA3 NSI1, 1371 NSPC1, 1372 NLA111,
1377 CFR1 XMA3, 1378 HAE111,
- 1382 AspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAla
GACCTGGAGGTCGTACAGAGCACCTGGGTGCTCGTTGGCGGCGTCTGGCTGCTTTGGCC
CTGGACCTCCAGCAGTGCTCGTGGACCCACGAGCAACCGCCGAGGACGACGAAACCGG
- 1384 ECOR11 SCRF1, 1385 GSU1, 1388 MNL1, 1394 MAE3, 1399 BSP
1286 HGIA, 1404 ECOR11 SCRF1, 1409 BSP1286 HGIA, 1419 FNU4H1
, 1421 AHA11, 1422 HGA1, 1426 ECOR11 SCRF1, 1430 BBV FNU4H1,
1437 CFR1, 1438 HAE111, 1439 FNU4H1, 1441 THA1,
- 1442 AlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLys
GCGTATTGCCGTGTCACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGTCGGGGAAG
CGCATAACGGACAGTTGTCCGACGCACAGTATCACCCGTCCAGCAGAACAGGCCCTTC
- 1453 HINC11, 1461 BBV FNU4H1, 1494 HPA11 NCI1 SCRF1, 1501 NA
E1,
- 1502 ProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCys
CCGGCAATCATACCTGACAGGGAAGTCTCTACCGAGAGTTCGATGAGATGGAAGAGTGC
GGCCGTTAGTATGGACTGTCCCTTCAGAGATGGCTCTCAAGCTACTCTACCTTCTCAGC
- 1502 HPA11, 1528 MNL1, 1542 TAQ1, 1553 MBO11, 1558 BSP1286 H
GIA,
- 1562 SerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLys
TCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAG
AGAGTCGTGAATGGCATGTAGCTCGTTCCTACTACGAGCGGCTCGTCAAGTTCGCTTC
- 1563 DDE1, 1576 RSA1, 1581 TAQ1, 1590 FOK1, 1594 SFAN1, 1612

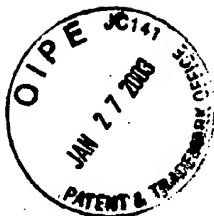


FIG. 79D

- TTHIII2, 1621 HAE111 SAU96,
- 1622 AlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGln
GCCCTCGGCCTCTGCGAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAG
CGGGAGCCGGAGGACGTCTGGCGCAGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTC
- 1624 MNL1, 1628 HAE111, 1630 MNL1, 1634 PST1, 1639 TTHIII1,
1642 THA1, 1643 HGA1, 1658 MNL1,
- 1682 ThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGly
ACCAACTGGCAAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGG
TGGTTGACCGTTTTTGTAGCTCTGGAAGACCGCTTCGTATACACCTTGAAGTAGTCACCC
- 1697 AVA1 XHO1, 1698 TAQ1, 1718 NDE1,
- 1742 IleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMet
ATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCGCCATTGCTTCATTGATG
TATGTTATGAACCGCCCGAACAGTTGCGACGGACCATTTGGGGCGGTAACGAAGTAACACTAC-
- 1762 HINC11, 1768 BBV FNU4H1, 1772 ECOR11 SCRF1, 1775 BSTE2,
1776 MAE3,
- 1802 AlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIle
GCTTTTACAGCTGCTGTCACCAGCCCACTAACCCTAGCCAAACCTCTCTTCAACATA
CGAAAATGTCGACGACAGTGGTTCGGGTGATTGGTGATCGGTTGGGAGGAGAAGTTGTAT
- 1809 ALWN1 NSPB11 PVU11, 1810 ALU1, 1811 BBV FNU4H1, 1817 MA
E3, 1818 HPH, 1836 MAE1, 1846 MNL1, 1849 MNL1, 1851 MB011,
- 1862 LeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGly
TTGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTGGGC
AACCCCCCACCACCGACGGGTTCGAGCGCGGGGGCCACGGCGATGACGGAAACACCCCG
- 1877 BBV FNU4H1, 1884 ALU1, 1889 FNU4H1, 1895 NC11 SCRF1, 18
96 HPA11, 1898 BAN1 NLA1V, 1901 FNU4H1, 1919 HAE11, 1920 HHA
1,
- 1922 AlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIle
GCTGGCTTAGCTGGCGCGCCATCGGCAGTGTGGACTGGGGAAGGTCTCTCATAGACATC
CGACCGAATCGACCGCGGGGTAGCCGTACAACCTGACCCCTTCAGGAGTATCTGTAG
- 1927 DDE1, 1930 ALU1, 1934 AHA11 BAN1 HAE11 NAR1 NLA1V, 1935
HHA1, 1937 FNU4H1, 1966 AVA2 SAU96, 1969 MNL1, 1978 FOK1,
- 1982 LeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGly
CTTGACGGGTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGACGGT
GAACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCA
- 1995 HHA1, 1996 THA1, 2010 BAN11 BSP1286 HGIA SAC1, 2011 ALU
1, 2021 BSM1, 2029 MB01 SAU3A, 2032 NLA111, 2039 HPH,
- 2042 GluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAla
GAGGTCCCTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCTCTCGCCCGGAGCC
CTCCAGGGGAGGTGCCTCTTGGACAGTTAGATGACGGGCGGTAGGAGAGCGGGCTCGG
- 2042 MNL1, 2044 AVA2 NLA1V SAU96, 2049 MNL1, 2057 MNL1, 2059
AVA2 SAU96, 2060 TTHIII1, 2062 ECOR11 SCRF1, 2083 FOK1, 208
6 MNL1, 2093 NC11 SCRF1, 2094 HPA11, 2096 NLA1V, 2097 BAN11
BSP1286, 2101 MNL1,
- 2102 LeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGly
CTCGTAGTCGGCGTGGTCTGTGTCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGG
GAGCATCAGCCGCACAGACACGTCTGTTATGACCGCGCGGTGCAACCGGGCCCGCTCCCC
- 2123 BBV FNU4H1, 2134 HHA1, 2136 NAE1, 2137 HPA11, 2142 MAE2
, 2147 HAE111 SAU96, 2149 AVA1 NC11 SCRF1 SMA1, 2150 HPA11 N



FIG. 79E

CI1 SCRF1, 2156 MNL1,

AlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
2162 GCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGAACCATGTTTCCCC
CGTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGG

2172 FOK1, 2179 HPA11, 2196 MNL1, 2199 AVA1 NCII SCRF1 SMA1,
2200 HPA11 NCII SCRF1, 2205 NLA1V, 2210 NLA111,

2222



FIG. 80A

Human 23

GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyArgAla
1 GGCTTCGCCGACCTCATGGGTACATACCGTCGTCGGCGCCCTCTTGGAGGCCGTGCC
ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsn
61 AGGGCCCTGGCGCACGGCGTCCGGTTTGGAGACGGCGTGAACATATGCAACAGGGAAC
CG A
LeuProGlyCysSerPheSerIlePheLeuLeuAlaLeuLeuSerCysLeuThrValPro
121 CTTCCCTGGTTGCTCCTTTTCTATCTTCCCTTCTGGCCCTACTCTCTTGCCCTGACCCGTGCC
GA T
AlaSerAlaTyrGlnValArgAsnSerThrGlyLeuTyrHisValThrAsnAspCysPro
181 GCTTCAGCCTACCAAGTGGCAACTCTACGGGGCTTTACCATGTCAACCAATGATTGCCCT
AsnSerSerIleValTyrGluAlaAlaAspAlaIleLeuHisAlaProGlyCysValPro
241 AACTCGAGTATTGTACGAGGCGCGCGATGCCATCCTGCACGCTCCGGGGTGTGTCCCT
T C
CysValArgGluAspAsnValSerArgCysTrpValAlaValThrProThrValAlaThr
301 TGCGTTCGCGAGGATAACGTCTCGAGATGTTGGTGGCGGTGACCCCCACGGTGGCCACC
G T
LysAspGlyLysLeuProThrThrGlnLeuArgArgHisIleAspLeuLeuValGlySer
361 AAGGACGGCAAACTCCCCACAACGAGCTTCGACGTCAATCATCGATCTGCTTGTCTCGGAGC
C A
AlaThrLeuCysSerAlaLeuTyrValGlyAspLeuCysGlySerIlePheLeuValGly
421 GCCACCCCTCTGCTCGGCCCTCTACGTGGGGGACCTTGGGGTCCATCTTTCTTGTCTGGT
T
GlnLeuPheThrPheSerProArgArgHisTrpThrThrGlnAspCysAsnCysSerIle
481 CAACTGTTTACCTTCTCTCCAGGCGGCCACTGGACGACGACGACTGCAACTGTTCTATC
C



FIG. 80B

541 TyrProGlyHisIleThrGlyHisArgMetAlaTrpAspMetMetMetAsnTrpSerPro
TATCCCGGCCATATAACGGTCAACGGTCATGGCATGGATGATGATGAATGATGGTCCCT
G

601 ThrAlaAlaLeuValAlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIle
ACGGCGGCATTGGTAGTAGCTCAGCTGCTCCGGATCCCAAGCCATCTTGGACATGATC
G AG

661 AlaGlyAlaHisTrpGlyValLeuAlaGlyMetAlaTyrPheSerMetValGlyAsnTrp
GCTGGTGCTCACTGGGGAGTCCCTGGCGGCATGGCGTATTCTCCATGGTGGGAACTGG
G

721 AlaLysValLeuValLeuLeuLeuPheAlaGlyValAspAlaGluThrHisArgThr
GCGAAGGTCCTGCTAGTGTGCTTCTATTGCGGCGTCGACGCGGAAACCCACCGTACC
G

781 GlyGlySerAlaAlaArgSerThrAlaGlyValAlaSerLeuPheThrProGlyAlaArg
GGGGAAGTCCCGCCCGCAGCACGGCTGGAGTTGCTAGTCTCTTCACACCAGCGCTAGG
C T A

841 GlnAsnIleGlnLeuIleAsnThrAsnGlySerTrpHisIleAsnSerThrAlaLeuAsn
CAGAACATCCAGCTGATCAACACCAACGGCAGTTGGCACATCAATAGTACGGCCTTGAAC
AT

901 CysAsnAspSerLeuThrThrGlyTrpLeuAlaGlyLeuPheTyrHisHisLysPheAsn
TGCAATGACAGCCTTACCACCGGCTGGTTAGCGGGCTTTTCTATCACCATAAATTCAAC
A

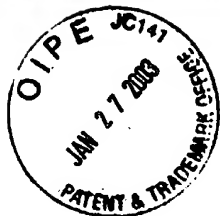
961 SerSerGlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAlaGln
TCTTCAGGCTGTCCCGAGAGGTTGGCCAGCTGCCGACCCCTCACCAGATTGTGCCCAGG
G A



FIG. 81A

Human 27

GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAla
1 GGCTTCGCCGACCTCATGGGTACATCCGCTCGTCGGCTCCTCTTGGGGCGCTGCC
ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsn
61 AGGGCCCTGGGCATGGCGTCCGGTTCTGGAAGACGGCGTGAACATGCAACAGGGAAC
LeuProGlyCysSerPheSerIlePheLeuLeuAlaLeuLeuSerCysLeuThrValPro
121 CTTCCCTGGTTGCTCTTTCTCTATCTTCTTCTTGGCTCTGCTCTCTGACCCGTGCC
AlaSerAlaTyrGlnValArgAsnSerSerGlyIleTyrHisValThrAsnAspCysPro
181 GCATCGGCCCTACCAAGTAGCGAACTCCTCGGGCATTTACCATGTCAACCAATGATGCCCC
AsnSerSerIleValTyrGluThrAlaAspThrIleLeuHisSerProGlyCysValPro
241 AATTCCGAGTATTGTGTACGAGACGGCCGACACCATCTACACTCTCCGGGTGTGTCCCT
CysValArgGluGlyAsnAlaSerLysCysTrpValProValAlaProThrValAlaThr
301 TGCGTTCGCGAGGGTAACGCCCTCGAAATGTTGGGTGCCGGTAGCCCCCACAGTGGCCACC
ArgAspGlyAsnLeuProAlaThrGlnLeuArgArgHisIleAspLeuLeuValGlySer
361 AGGGACGGCAACCTCCCCGCAACGCAGCTTCGACGTACACATCGATCTGCTGTTCGGGAGT
AlaThrLeuCysSerAlaLeuTyrValGlyAspLeuCysGlySerValPheLeuValGly
421 GCCACCCCTTTGCTCGGCCCTCTATGTGGGGACTGTGTGGGTCTGTCTTTCTTGTCCGT
GlnLeuPheThrPheSerProArgArgHisTrpThrThrGlnAspCysAsnCysSerIle
481 CAACTGTTCACTTTCTCCCCCAGGGCCACTGGACAACGCAAGATTGCAACTGCTCTATC
A



541 TyrProGlyHisIleThrGlyHisArgMetAlaTrpAspMetMetMetAsnTrpSerPro
TACCCCGGCCATATAACGGGACACCGCATGGCATGGGATATGATGATGAACGTGCCCT

AlaGlyAlaHisTrpGlyValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrp
GCTGGTGCTCACTGGGGAGTCTAGCGGCATAGCGTATTTCTCCATGGTGGGAACTGG

GlyGlyAsnAlaAlaArgThrThrGlnAlaLeuThrSerPhePheSerProGlyAlaLys
781 GGGGGGAATGCTGCCAGGACCACGCAGGCGCTCACCAAGTTTTTCAGCCAGGCGCAAG

901 CysAsnAlaSerLeuAspThrGlyTrrpValAlaGlyLeupheTyrTyrHisLysPheAsn
TGTAATGCGAGCCTCGACACTGGCTGGTAGCGGGCTCTTATACCAACAATTCAAC

961 SerSerGlyCysProGluArgMetAlaSerCysArgProLeuAlaAspPheAspGln
TCCTCAGGCTGCCCCGAGAGGATGGCCAGCTGTAGGCCCTTGCCGATTTCGACCAGG



FIG. 82A

1. human 27 2. HCV 1 3. human 23

```
1 CGGCTTCGCCGACCTCATGGGGTACATCCGCTCGTCGGCGCTCCTCTTGGGGCGGTGCCAGGGCCCTGGC
  *****
1 CGGCTTCGCCGACCTCATGGGGTACATACCGCTCGTCGGCGCCCTCTTGGAGGGCGTGCCAGGGCCCTGGC
  *****
1 CGGCTTCGCCGACCTCATGGGGTACATACCGCTCGTCGGCGCCCTCTTGGAGGGCGTGCCAGGGCCCTGGC
  *****
73 GCATGGCGTCGGGGTTCTGGAAGACGGCGTGAACTATGCAACAGGGAACCTTCCTGGTTGCTCTTTCTCTAT
  *****
73 GCATGGCGTCGGGGTTCTGGAAGACGGCGTGAACTATGCAACAGGGAACCTTCCTGGTTGCTCTTTCTCTAT
  *****
73 GCAGGGCGTCGGGGTTTGGGAAGACGGCGTGAACTATGCAACAGGGAACCTTCCTGGTTGCTCTTTCTCTAT
  *****
145 CTTCCCTTCGGGCTCTGCTCTCTTGCCCTGACCGTGCCCCGCaTCGGSCCTACCAAGTaCGCAACTCCTCGGGCaT
  *****
145 CTTCCCTTCGGGCTCTGCTCTCTTGCTTGACTGTGCCCCGCTTCGGSCCTACCAAGTGCGCAACTCCACGGGGCT
  *****
145 CTTCCCTTCGGGCTCTGCTCTCTTGCCCTGACCGTGCCCCGCTTCaGSCCTACCAAGTGCGCAACTCTACGGGGCT
  *****
217 TTACCAAtGTCAACCAATGATTGCCCTAAAtTCGAGTATTGTACGAGaCGGCCGACaCCATCCTaCACTCTCC
  *****
217 TTACCAAGTCACCAATGATTGCCCTAAAtTCGAGTATTGTACGAGGCGGCCGATGCCATCCTGCACaCTCC
  *****
217 TTACCAAtGTCAACCAATGATTGCCCTAAAtTCGAGTATTGTACGAGGCGGCCGATGCCATCCTGCACgCTCC
  *****
289 GGGGTGtGTCCCTTCGGTTCGcGAGGGtAACGCCCTCGAaaTGTTGGGTGcCGgTagCCCCcACaGTGGCCAC
  *****
289 GGGGTGcGTCCCTTCGGTTCGtGAGGGcAACGCCCTCGAGgTGTTGGGTGGCGaTGACCCCTACGGTGGCCAC
  *****
289 GGGGTGtGTCCCTTCGGTTCGcGAGGAtAAGGtCTCGAGaTGTTGGGTGGCGgTGACCCcACGGTGGCCAC
  *****
```

FIG. 82B

361 CAGGACGGCAACTCCCGGCAACGACCTTCGACGTACATCGATCTGCTTGTGGAGtGCCACCTtTG

 361 CAGGAtGGCAACTCCCGGcAGCGACCTTCGACGTACATCGAtCTGCTTGTGGAGCGCCACCTCTG

 361 CAAGAcGGCAACTCCCGcAaCGGACCTTCGACGTACATCGAtCTGCTTGTGGAGCGCCACCTCTG
 433 CTCGGCCCTTAAtGTGGGGACtTGTGGGCTGTCTTCTTGTGGtCAACTGTCAcTtTCTcCCcAG

 433 tTCGGCCCTTAAGTGGGGACCTGTGCGGCTGTCTTCTTGTGGcCAACTGTCAcCTTCTcCCcAG

 433 CTCGGCCCTTAAGTGGGGACCTtTGGGGTCAcTtTCTTGTGGtCAACTGTtTAcCTTCTcCCcAG
 505 GCGCCACTGGACaCGCAAGAtTGCACtGTCTATCTAcCCCGGCATATAcGGGaCACCgCATGGCATG

 505 GCGCCACTGGACGcAGGAtTGCACtGTCTATCTATCCCGGCATATAcGGGTCAcCGCATGGCATG

 505 GCGCCACTGGACGcAGGAtTGCACtGTCTATCTATCCCGGCATATAcGGGTCAcCGCATGGCATG

 577 GGATATGATGATGAATGtTCCCTACagCAGCGtGTAAAGCTCAAGCTGTCAgATCCGCAAGCCAT

 577 GGATATGATGATGAATGtTCCCTACGAGCGGTGTAAAGCTCAAGCTGTCCGATCCCAcAAGCCAT

 577 GGATATGATGATGAATGtTCCCTACGcGCGcATGTGAtAGCTCAAGCTGTCCGATCCCAcAAGCCAT
 649 CTTGGACATGATCGCTGtGTCTCACTGGGAGTCTAGCGGCATAGCGTATTCTCCATGtTGGGAATG

 649 CTTGGACATGATCGCTGtGTCTCACTGGGAGTCTAGCGGCATAGCGTATTCTCCATGtTGGGAATG

 649 CTTGGACATGATCGCTGtGTCTCACTGGGAGTCTAGCGGCATAGCGTATTCTCCATGtTGGGAATG
 721 GCGGAAGTCTGTGtGTGCTGtTGTGtTGTCCGCGCTGAtGCGAcACcTAtaCCAcCGGGGgAtGc

 721 GCGGAAGTCTGTGtGTGCTGtTGTGtTGTCCGCGCTGAcCGGAACCCAcGtCAcCGGGGgAtGc

 721 GCGGAAGTCTGTGtGTGCTGtTGTGtTGTCCGCGCTGAcCGGAACCCAcGtCAcCGGGGgAtGc





793 tGcCaggaCCcaGcgGcgCTcaCcaGtTtTtCagccCAAGCGCCCAAGCAGgAtaTCCAGCTGATCAAC
* * * * *
793 CGgCCaCActgtGtCTGgAtTgTtAgcCTcTcTgCAcCAAGCGCCCAAGCAGaCgTCCAGCTGATCAAC
* * * * *
793 CGcCCgCAgcacGgCTGgAgTgTgTAgTcTcTtCaCAcCAAGCGcTAgGCAgACaTCCAGCTGATCAAC
* * * * *
865 CAACGGCAGTTGGCAcATCAATcGCAcGGcCTTGACTGtAATGcgAGcCTCgACAcTGGCTGgTAgCgG
* * * * *
865 CAACGGCAGTTGGCAcCTCAATAGCAcGGcCTGAACCTGAATGAtAGcCTCAACACCGGCTGgTgCagG
* * * * *
865 CAACGGCAGTTGGCAcATCAATAGtACGGcCTGAACCTGAATGAcAGcCTtAcCAcCGGCTGgTAgCgG
* * * * *
937 GCTcTTCTATtACCACAATTCaACTCTTCAGGCTGcCCcGAGAGgATgGCCAGCTgtagCCCTTgCCGA
* * * * *
937 GCTTTCTATcACCACAATTCaACTCTTCAGGCTGtCCtGAGAGcTAgCCAGCTGCCGACCCCTTACCGA
* * * * *
937 GCTTTCTATcACCAtAAATTCaACTCTTCAGGCTGtCCcGAGAGgTgGCCAGCTGCCGACCCCTcACCGA
* * * * *
1009 TTtCGACcCAGG
* * * * *
1009 TTTGACcCAGG
* * * * *
1009 TTTGcCCAGG
* * * * *

FIG. 82C

FIG. 83

```

1 GFADLMGYIPLVGAPLGGAARALAHGVRVLEDDGVNATGNLPCCSFSIFLLALLSCLTPASAYQVRNSGI
*****
1 GFADLMGYIPLVGAPLGGAARALAHGVRVLEDDGVNATGNLPCCSFSIFLLALLSCLTPASAYQVRNSTGL
*****
1 GFADLMGYIPLVGAPLGGAARALAHGVRVLEDDGVNATGNLPCCSFSIFLLALLSCLTPASAYQVRNSTGL
*****
73 YHVTNDCPNSSIVYEADTILHSPGCVPCVREGNASKCWVpvaPTVATRDGnLPATQLRHIDLVSATLC
*****
73 YHVTNDCPNSSIVYEADAILHtPGCVPCVREGNASRCWVAmPTVATRDGKLPAQQLRRHIDLVSATLC
*****
73 YHVTNDCPNSSIVYEADAILHtPGCVPCVREGNASRCWVAmPTVATRDGKLPAQQLRRHIDLVSATLC
*****
145 SALYVGDLGCVFLVGOLFESPRRHWTQDNCNSIYPGHITGHMAWDMMNWSPtALVMAQLLRIPQAI
*****
145 SALYVGDLGCVFLVGOLFESPRRHWTQDNCNSIYPGHITGHMAWDMMNWSPtALVMAQLLRIPQAI
*****
145 SALYVGDLGCVFLVGOLFESPRRHWTQDNCNSIYPGHITGHMAWDMMNWSPtALVMAQLLRIPQAI
*****
217 LDMIAGAHWGVLAGIAYFSMVGNNWAKVLVLLLFAGVDAtTyttGnAaRttgaltsffsPGAKodIQLINT
*****
217 LDMIAGAHWGVLAGIAYFSMVGNNWAKVLVLLLFAGVDAtTyttGnAaRttgaltsffsPGAKodIQLINT
*****
217 LDMIAGAHWGVLAGIAYFSMVGNNWAKVLVLLLFAGVDAtTyttGnAaRttgaltsffsPGAKodIQLINT
*****
289 NGSWHLNLTALNCNAsLdtGwvAGLFYHkFNSSGCCPERMaSCRPIADFDQ
*****
289 NGSWHLNSTALNCNDSLnTGwLAGLFYHkFNSSGCCPERLaSCRPIlTDfDQ
*****
289 NGSWHLNSTALNCNDSLttGwLAGLFYHkFNSSGCCPERLaSCRPIlTDfDQ
*****

```

1. human 27
2. HCV 1
3. human 23



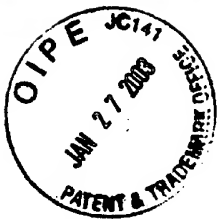
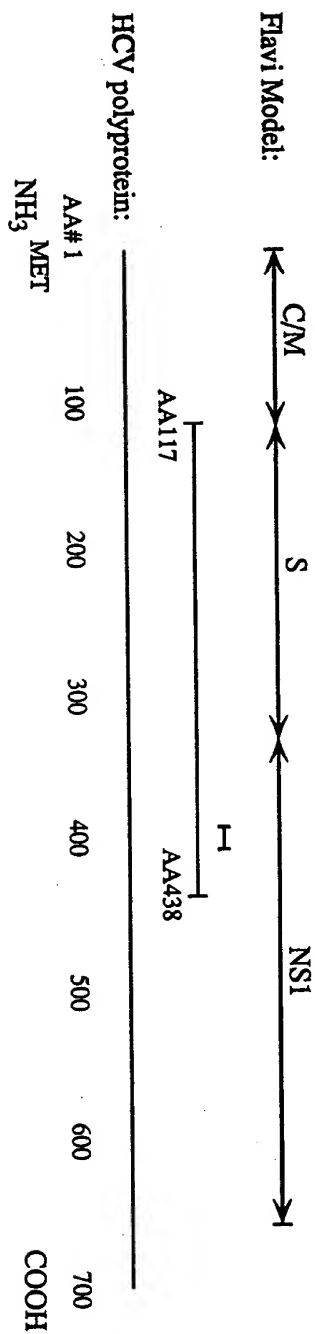


FIG. 84



1	1.	sSThorn#8.r	(1-587)
1	2.	sSECl#2.r	(1-587)
1	3.	sSHCT18#7.r	(1-587)
1	4.	env1.hcv	(1-1657)

GA GA GA

289 gggtgagcgcctcttccacggatgcttcctcgacctgaggaccgccgagtga

3 ATTCCGAATTGGGTAAGGTCATCGATACCTTACGTGCGGCTTCCCGGACCTCATGGGGTACATAACGGCTC
3 ATTCCGAATTGGGTAAGGTCATCGATACCTTACGTGCGGCTTCCCGGACCTCATGGGGTACATAACGGCTC
3 ATTCCGAATTGGGTAAGGTCATCGATACCTTACGTGCGGCTTCCCGGACCTCATGGGGTACATAACGGCTC
3 ATTCCGAATTGGGTAAGGTCATCGATACCTTACGTGCGGCTTCCCGGACCTCATGGGGTACATAACGGCTC
3 ATTCCGAATTGGGTAAGGTCATCGATACCTTACGTGCGGCTTCCCGGACCTCATGGGGTACATAACGGCTC

75 GTCGGCGCCCTCTTGggGGCGCTGCCAGGGCCCTGGCGCATGGCGTCCGGTCTTGGAAGACGGCGTGAAC
75 GTCGGCGCCCTCTTGGAAGCGCGCTGCCAGGGCCCTGGCGCATGGCGTCCGGTCTTGGAAGACGGCGTGAAC
75 GTCGGCGCCCTCTTGGAAGCGCGCTGCCAGGGCCCTGGCGCATGGCGTCCGGTCTTGGAAGACGGCGTGAAC
433 GTCGGCGCCCTCTTGGAAGCGCGCTGCCAGGGCCCTGGCGCATGGCGTCCGGTCTTGGAAGACGGCGTGAAC



147 TATGCAACAGGGAACCTTCCTGCTGCTTGCCTCTTCTcTcTCTTCCCTTCGGCCcTGCTCTCTTgcTGACcGTG
147 TATGCAACAGGGAACCTTCCTGCTGCTTGCCTCTTCTcTATATCTTCCCTTCGGCCcTGCTCTCTTgcTGACtGTG
147 TATGC CAGGGAACCTTCCTGCTGCTTGCCTCTTCTcTATATCTTCCCTTCGGCCcTGCTCTCTTgcTGACtGTG
505 TATGCAACAGGGAACCTTCCTGCTGCTTGCCTCTTCTcTATATCTTCCCTTCGGCCcTGCTCTCTTgcTGACtGTG
219 CCGCGTTCAGCCTACCAAGTGGCGCAACTCCaCGGGGCTTTACCAATGTCAACCAaGATTGCCCCaACTCGAGt
219 CCGCGTTCAGCCTACCAAGTGGCGCAACTCCtCGGGGCTTTACCAATGTCAACCAATGATTGCCcTAaCTCGAGc
219 CCGCGTTCAGCCcACCAAGTGGCGCAACTCCACGGGGCTTTACCAATGTCAACCAATGATTGCCcCAaCTCGAGT
577 CCGCGTTCgCCcTACCAAGTGGCGCAACTCCACGGGGCTTTACCAcGTCAACCAATGATTGCCcTAaCTCGAGT
291 ATTGTGTACGAGGCGCGCGATGcTAATCCTGCACgCTCCGGGGTGTGTCCTTGCGTTGCGAGGGtAACGCC
291 ATTGTGTACGAGGCGCGCGATGCGATCCATCTCGACACTCCGGGGTGTGTCCTTGCGTTACGAGGGCAACGTc
291 ATTGTATACGAAGCGCGCGAaCGCCATCTCGACACTCCGGGGTGTGTCCTTGCGTTACGAGGGCAACGTc
649 ATTGTGTACGAGCGCGCGCGATGcCATCTCGACACTCCGGGGTGTGTCCTTGCGTTGtGAGGGCAACGCC
363 TCGAGGTGTTGGGTGGCGATGACCCcCACGGGTGGCGCCAGGGAaCGGCAgACTCCcCACAAaCGCAGCTgCGA
363 TCGAGGTGTTGGGTGGCGATGACCCcCACGGGTGGCGCCACGAGGgCGGCAAACTCCcCACAAaCGCAGCTTGA
363 TCGAGGTGTTGGGTGGCGgTGACCCcCACGGGTGGCGCCACGAGATGCAAACTCCcCACAAaCGCAGCTTGA
721 TCGAGGTGTTGGGTGGCGATGACCCcTACGGTGGCGCCACGAGGATGCAAACTCCcCGgACGCACTTGA

435 CGTCACATCGATCTGCTTGTCCGGAGCGCCACCCTCTGCTCGGCCCTCTACGTGGGGGACCTGTGCGGCTCC
435 CGTCACATCGATCTGCTTGTCCGGAGCGCtACCCTCTGCTCGGCCCTCTACGTGGGGGACCTGTGCGGCTCT
435 CGTCACATCGATCTGCTTGTCCGGAGCGCCACCCTCTGCTCGGCCCTCTAtGTGGGGGACtTGTGCGGCTCT
793 CGTCACATCGATCTGCTTGTCCGGAGCGCCACCCTCTGtTCCGCCCTCTACGTGGGGGACcTAtTCCGGGCTCT

507 ATCTTtCTTGTCCGTCACACTGTTcACCCTTCTCTCCcAGCGCCCACTGGACGACGCAAGGTTGCAATTGCTCT
507 GTCTTcCTTGTCCGTCACACTGTTTACCCTTCTCTCCcAGCGCCCACTGGACGACGCAAGGTTGCAATTGCTCT
507 GTCTTtCTTGTCCGTCACACTGTTTACCCTTCTCTCCcAGCGCCCACTGGACGACGCAAGGTTGCAATTGCTCT
865 GTCTTtCTTGTCCGTCACACTGTTcACCCTTCTCTCCcAGCGCCCACTGGACGACGCAAGGTTGCAATTGCTCT

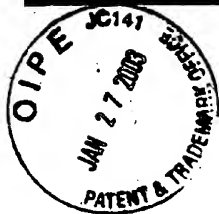
579 ATCGAATTc
579 ATCGAATTc
579 ATCGAATTc
937 ATCtAtccC

FIG. 85C



[illegible]

FIG. 86



AA #117-308 (putative envelope region)

FIG. 87

- | | |
|-----------------------|--------------------|
| 1) HCT #18 (USA) | 3 clones sequenced |
| 2) JH23 (USA) | ? |
| 3) JH 27 (USA) | ? |
| 4) PBL-Th (USA) | 2 clones sequenced |
| 5) EC1 (Italy) | 3 clones sequenced |
| 6) HCV-1 (chimpanzee) | multiple |

C/M ← T → S

- 1) (P)
 2)
 3)
 4)
 5)

6) RNLGKVIDTLTCGFADLMGYIPLVGAPLGGAAARALAHGVRVLEDGVNYATGNL

- 1) H
 2)
 3) S T T
 4) L
 5) (F) S

6) PGCSFSIFLLALLSCLTVPASAYQVRNSTGLYHVTNDCPNSSIVYEAADAILH

- 1) Y (H) V V T
 2) A D V V K T
 3) S PVA N
 4) A A R T
 5) H V T

6) TPGCVPCVREGNASRCWVAMTPTVATRDGKLPATQLRRHIDLLVGSATLCS

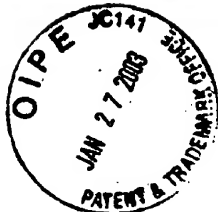
- 1)
 2) I D
 3) D
 4)
 5) I

6) ALYVGDLGSGVFLVGQLFTFSPRRHWTTQGCNCSI

SUMMARY: "S" AA117-308 (93%)

HCT#18, PBL-Th, EC1(Italy) have 97% homology with HCV-1

JH23 and JH 27 have 96% and 95% homology with HCV-1, respectively



AA#300-438 (C-terminal region of the putative envelope region and amino ~1/3 of NSI)

- 1) JH23
- 2) JH27
- 3) Japanese isolate (T. Miyamura)
- 4) EC10 (Italy)

?

?

?

2 clones sequenced
(one nt difference, which did not
result in an amino acid change)
multiple

- 5) HCV-1 (chimpanzee)

S ← NSI

- 1) D
- 2) D
- 3)
- 4)

A V

A

V S

VM V

5)TTQGCNCSIYPGHITGHRMAWDMMMNSPTTALVMAQLLRIPQAILDMIAGA

- 1) M R ARSTA VA
- 2) T YT N AR TQALT F
- 3) L Y I M GH R VQ VT TLT
- 4) A I AK TASLTA

5)HWGVLAGIAYFSMVGWNWAKVLVLLLFAGVDAETHVTGGSAGHTVSGFVSL

- 1)FS R I I T V
- 2)FT DI I R A D
- 3)FR S KI V I R Q F
- 4)FNL I I R N

5)LAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWL

SUMMARY: NS 1 AA 330-660

"Isolate"	%Homology (AA330-438)	%Homology (AA383-405)
JH23	83	57
JH27	80	39
Japanese	73	48
EC10 (Italy)	84	48

FIG. 88

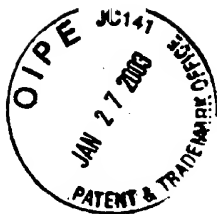


FIG. 89A

5' terminus-----
CACTCCACCATGAATCACTCCCCTGTGAGGAAGTACTGTCTTCACGCAGAAAGCGTCTAG
CCATGGCGTTAGTATGAGTGTGCTGACGCTCCAGGACCCCCCTCCCGGGAGAGCCATA
GTGGTCTGCGGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCTTTCTTGGA
TCAACCCGCTCAATGCCTGGAGATTTGGGCGTGCCCCGCAAGACTGCTAGCCGAGTAGT
GTTGGGTGCGGAAAGGCTTGTGGTACTGCCTGATAGGGTGTTCGAGTGCCCCGGGAG-300

(Putative initiator methionine codon)

GTCTCGTAGACCGTGACCATGAGCACGAATCCTAAACCTCAAAAAAACAACGTAA
CACCACCGTCGCCCACAGGACGTCAAGTTCGCGGTGGCGGTACAGTCTGGTGGAGT
TTACTTGTGGCGCGCAGGGGCCCTAGATTGGGTGTGCGCGCAGAGAAAGACTTCCGA
GCGGTGCGCAACCTCGAGGTAGACGTACGCTATCCCCAAGGCTCGTGGCCCCGAGGGCAG
GACCTGGGCTCAGCCCCGGGTACCTTGGCCCCCTATGGCAATGAGGGCTGCGGGTGGGC-600
GGGATGGCTCCTGTCTCCCCGTGGCTCTCGGCCTAGCTGGGGCCCCACAGACCCCCGGCG
TAGGTGCGCAATTTGGGTAAGGTATCGATACCTTACGTGCGGCTTCGCCGACCTCAT
GGGTACATACCGCTCGTGGCGCCCCCTTTGGAAGCGCTGCCAGGGCCCTGGCGCATGG
CGTCCGGGTTCTGGAAGACGGCGTGAACATGCAACAGGGAACCTTCTGGTTGCTCTTT

CTCTATCTTCCTTCTGGCCCTGCTCTTGTGCTTACTGTGCGCGCTTCGGCCTACCAAGT-900
GCGCAACTCCACGGGGCTTTACCACGTACCAATGATTGCCCTAACTCGAGTATTGTGTA
CGAGGGCGCCGATGCCATCCTGCACACTCGGGGTGCGTCCCTTGCCTTCGTGAGGGCAA
CGCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAAGGATGGCAAACTCCC
CGCGACGCGAGCTTCGACGTACATCGATCTGCTTGTGCGGAGCGCCACCTCTGTTCCGGC
CCTCTACGTGGGGGACCTATGCGGGTCTGTCTTTCTTGTGCGGCAACTGTTACCTTCTC-1200
TCCAGGGCGCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCGGCCATATAAC

GGGTACCGCATGGCATGGGATATGATGATGAAGTGGTCCCTACGACGGCGTTGGTAAT
GGCTCAGCTGCTCCGGATCCCAAGCCATCTTGGACATGATCGCTGGTGTCTACTGGGG
AGTCTTGGCGGGCATAGCGTATTTCTCCATGGTGGGGAAGTGGGCGAAGGTCTTGGTAGT
GCTGCTGCTATTTGCGGGCGTGCAGCGGAAACCCACGTACCGGGGGGAAGTGCCGGCCA-1500
CACTGTGTCTGGATTTGTTAGCCTCCTCGACACGAGCGCCAAGCAGAACGTCCAGCTGAT
CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAAGTGAATGATAGCCTCAA
GACCGGTGGTTGGCAGGGCTTTCTATCACCACAAGTTCAACTCTTCAGGCTGTCTGA
CAGCTAGCGAGCTGCCGACCCCTTACCGATTTTGACAGGGCTGGGGCCCTATCAGTTA
TGCCAACGGAAGCGGGCCCGACGAGCGCCCTACTGCTGGCACTACCCCCCAAAACCTTG-1800
CGGTATTGTGCCCGCGAAGAGTGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCCGT
GGTGGTGGGAACGACGAGGTGGGGCGCGCCACCTACAGCTGGGGTGAAAATGATAC
GGACGTCTTCGTCTTAACAATACGAGGCCACCGCTGGGCAATTGGTTGCGTTGTACCTG
GATGAAGTCAACTGGATTACCAAAAGTGTGCGGAGCGCTCCTTGTGTATCGGAGGGGC
GGGCAACAACACCCTGCACTGCCCCACTGATTGCTTCGCAAGCATCCGGACGCCACATA-2100

CTCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTCGACTACCCGTATAG
GCTTTGGCATTATCCTTGTACCATCAACTACACCATATTTAAAAATCAGGATGTACGTGGG
AGGGGTGCAACACAGGCTGGAAGCTGCCTGCAACTGGACGCGGGGCGAACGTTGCGATCT
GGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCACTACACAGTGGCAGGT
CTTCCCGTGTCTTCAACCCCTACCAAGCTTGTCCACCGGCTCATCCACCTCCACCA-2400
GAACATTGTGGACGTGAGTACTTGTACGGGGTGGGGTCAAGCATCGCGTCTGGGCCAT
TAAGTGGGAGTACGTCTTCTCTGTTCTTCTGCTTGCAGACGCGCGCTGCTGCTCTG
CTTGTGGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGAACCTGTAATACT
TAATGCAGATCCCTGGCGGGACGACGGTCTTGTATCCTTCTCTGTTCTTCTGCTT
TGCATGGTATTTGAAGGGTAAGTGGGTGCCCGGAGCGGTCTACACCTTCTACGGGATGTG-2700
GCCTCTCCTCTGCTCCTGTTGGCGTTGCCCGAGCGGGCGTACGCGCTGGACACGGAGGT
GGCCGCGTCTGTGTCGGTGTGTTCTCGTGGGTTGATGGCGCTGACTCTGTACCCATA
TTACAAGCGCTATATCAGCTGGTGTGTTGGTGGCTTCAATTTTCTGACAGAGTGGGA
AGCGCAACTGCACGTGTGGATTCCCCCCTCAACGTCGAGGGGGGCGGACGCCGTCTAT



FIG. 89B

CTTACTCATGTGTGCTGTACACCCGACTCTGGTATTTGACATCACCAAATTGCTGCTGGC-3000
CGTCTTCGGACCCCTTTGGATTCTTCAAGCCAGTTTGTCTAAAGTACCTACTTTGTGCG
CGTCCAAGGCCTTCTCCGGTTCTGCGCTTAGCGCGGAAGATGATCGGAGGCCATTACGT
GCAAATGGTCATCATTAAGTTAGGGGCGCTTACTGGCACCTATGTTTATAACCATCTCAC
TCCTCTTCGGGACTGGGCGCACAAAGGCTTGCAGATCTGGCCGTGGCTGTAGAGCCAGT
CGTCTTCTCCCAAATGGAGACCAAGCTCATACGTGGGGGGCAGATACCGCCGCTGCGG-3300
TGACATCATCAACGGCTTGCCTGTTCCGCCCGCAGGGGCGGGAGATACTGCTCGGGCC
AGCCGATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCATCACGGCGTACGCCCA
GCAGACAAGGGGCTCCTAGGGTGCATAATCACCAGCCTAACTGGCCGGGACAAAACCA
AGTGGAGGGTGAGGTCCAGATTGTGTCAACTGCTGCCCAAACCTTCTGGCAACGTGCAT
CAATGGGGTGTGCTGGACTGTCTACCACGGGGCGGAACGAGGACCATCGCGTCAACCAA-3600

GGGTCTGTCTCCAGATGTATACCAATGTAGACCAAGACCTTGTGGGCTGGCCGCTCC^T

GCAAGGTAGCCGCTCATTGACACCCTGCACTTGGGGCTCCTCGGACCTTTACCTGGTCAC^C
GAGGCACGCCGATGTCTTCCCGTGGCGGGGGGGTGATAGCGGGGCGCCTGCTGTC
GCCCCGGCCATTCTCTACTTGAAGGCTCCTCGGGGGGTCCGCTGTTGTGCCCGCGGG
GCACGCCGTGGGCATTTAGGGGCGCGGTGTGACCCGTGGAGTGGCTAAGCGGGTGA-3900
CTTTATCCCTGTGGAGAACCTAGAGACAACCATGAGTCCCGGTGTTACCGGATAACTC
CTCTCCACAGTAGTGCCCGAGAGCTTCCAGGTGGCTCACCTCCATGCTCCACAGGCAG
CGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
CAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGTACATGTCCAAGGCTCATGGGAT

CGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTA^TCTC-4200
CACCTACGGCAAGTTCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGACATAATAAT
TTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATCGGCACCTGTCTTGA
CCAAGCAGAGACTGCGGGGGCGAGACTGTTGTGCTCGCCACCGCCACCCCTCCGGGCTC
CGTCACTGTGCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCC
TTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTTCTG-4500
TCATTCAAAGAAGAAGTGCGACGAACCTCGCCGCAAGCTGGTCCGATTGGGCATCAATGC
CGTGGCCTACTACCGGGTCTTGACGTGTCCGTCTATCCCGACCAAGCGGCGATGTTGTCGT

CGTGGCAACCGATGCCCTCATGACCGGCTATACCGCGACTTCGACTCGGTGATAGACTG^A
CAATACGTGTGTACCCAGACAGTCGATTTAGCCTTGACCTACCTTCACCATTGAGAC
AATCACGCTCCCCAGGATGCTGTCTCCGCACTCAACGTGCGGGGAGGACTGGCAGGGG-4800
GAAGCCAGGCATCTACAGATTTGTGGCACCAGGGGAGCGCCCTCCGGCATGTTGACTC
GTCCGTCTCTGTGAGTGTATGACGCAAGGCTGTGCTTGGTATGAGCTCACGCCCGCGCA
GACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCGCTGTGCCAGGACCA
TCTTGAATTTGGGAGGGCGTCTTTACAGGCCTACTCATATAGATGCCCATTTCTTATC
CCAGCAAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTG-5100
CGCTAGGGCTCAAGCCCTCCCCATCGTGGGACAGATGTGGAAGTGTGATTGCGCT
CAAGCCACCCCTCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTGAGAAATGA
AATCACCTGACGCACCCAGTCACCAATACATCATGACATGCATGTCGGCCGACCTGGA
GGTCGTACGAGCACCTGGGTGCTCGTTGGCGGGCTCTGGCTGCTTTGGCGCGTATTG
CCTGTCAACAGGCTGCGTGGTCTAGTGGGCAAGGTCGTCTTGTCCGGGAAGCGGCAAT-5400
CATACCTGACAGGGAAGTCTCTACCGAGAGTTCGATGAGATGGAAGAGTGTCTCAGCA
CTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGG
CCTCCTGCAGACCGGCTCCCGTCAGGCAGAGGTTATCGCCCTGCTGTCCAGACCAACTG
GCAAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTCATAGTGGGATACAATA
CTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTAC-5700
AGCTGCTGTACACAGCCCACTAACCACTAGCCAAACCTCCTCTTCAACATATTGGGGGG
GTGGGTGGTGGCCAGCTCGCCGCCCCGGTGCCGCTACTGCTTTGTGGGCGCTGGCTT
AGCTGGCGCGCCATCGGCAAGTGTGGACTGGGGAAAGGTCCTCATAGACATCCTTGACAGG
GTATGGCGCGGGCTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCC
CTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCTCTCGCCCGGAGCCCTCGTAGT-6000
CGGCGTGGTCTGTGACGAATACTGCGCGGGCACGTTGGCCGGGCGAGGGGGGAGTGCA
GTGGATGAACCGGTGATAGCTTTCGCTCCCGGGGGAACCATGTTTCCCCACGCACTA
CGTGGCGGAGAGCGATGCAGCTGCCCGGCTACTGCCATACTCAGCAGCCTCACTGTAAAC
CCAGCTCTGAGGCGACTGCACCAAGTGGAAGCTCGGAGTGTACCACTCCATGCTCCGG



FIG. 89C

TTCCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTG-6300
GCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCTGCCAGCGCGG
GTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
GATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCCTAGGACCTGCAGGAA
CATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCCTGTACCCCCCTTCC
TGCGCCGAACCTACACGTTGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAG-6600
GCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCGTG
CCAGTCCCCTCGCCGAATTTTCACAGAATTGGACGGGGTGGCCCTACATAGGTTTGC
GCCCCCTGCAAGCCCTTGTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGAATA
CCCCGTAGGGTCGCAATTACCTTGGCAGCCGAACCGGACGTGGCCGTGTTGACGTCCAT
GCTCACTGATCCCTCCCATAAACAGCAGAGGCGGCGGGCGAAGGTTGGCGAGGGGATC-6900
ACCCCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAAC
TTGACCCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAG
GCAGGAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGA
CTCCTTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCGAGAAAT
CCTGCGGAAGTCTCGGAGATTGCGCCAGGCCCTGCCCGTTTGGGCGGGCGGACTATAA-7200
CCCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCACTGTGGTCCATGAGTG
TCCGCTTCCACCTCCAAAGTCCCCCTCTGTGCTCCGCTCGGAAGAAGCGGACGGTGGT
CCTCACTGAATCAACCCTATCTACTGCCTTGGCCGAGCTCGCCACCAAGAACTTTGGCAG
CTCCTCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCCGCCCTTC
TGGCTGCCCCCCGACTCCGACGCTGAGTCTATTCTCCTCATGCCCCCCCTGGAGGGGGA-7500
GCCTGGGGATCCGGATCTTAGCGACGGGTATGGTCAACGGTCAGTAGTGAGGCCAACGC
GGAGGATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCACTCGTCACCCCGTG
CGCCGCGGAAGAACAGAAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTACCCA
CAATTTGGTGTATTCCACCACCTCAGCAGTGCTTGCCAAAGGCAGAAAGAAAGTCACTT
TGACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAGGTTAAAGCAGC-7800
GGCGTCAAAAGTGAAGGCTAAGTTGCTATCCGTAGAGGAAGCTTGACGCTGACGCCCCC
ACACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTTGCCATGCCAGAAA
GGCCGTAAACCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACAATGTAACACCAAT
AGACACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTACGCTGAGAGGGGGGTG
TAAGCCAGCTCGTCTCATCGTGTTCGCCGATCTGGGCGTGCGCGTGTGCGAAAAGATGGC-8100
TTTGTACGACGTGGTTACAAAGCTCCCCTTGGCCGTGATGGGAAGCTCTACGGATTCCA
ATACTCACCAGGACAGCGGGTTGAATTCCTCGTGCAAGCGTGGAAGTCCAAGAAAACCC
AATGGGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCG
TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGCTGGCCATCAA
GTCCCTCACCAGAGGCTTTATGTTGGGGGCCCTTTACCAATTCAAGGGGGGAGAACTG-8400
CGGCTATCGCAGGTGCCGCGCGAGCGGCGTACTGACAACCTAGCTGTGGTAAACCCCTCAC
TTGCTACATCAAGGCCCGGGCAGCCTGTGAGCCGACGGGCTCCAGGACTGCACCATGCT
CGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGC
GAGCCTGAGAGCCTTACGGAGGCTATGACCAGTACTCGCCCCCTTGGGGACCCCC
ACAACCAGAAATACGACTTGGAGCTCATAACATCATGCTCCTCAAACGTGTCACTCGCCCA-8700
CGACGGCGCTGGAAAGAGGGTCTACTACCTACCCGTGACCCTACAACCCCCCTCGCGAG
AGCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCAT
GTTTGGCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCTTAT
AGCCAGGGACAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCAT
AGAACCCTGGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTTCACT-9000
CCACAGTTACTCTCCAGGTGAAATTAATAGGGTGGCCGATGCCTCAGAAAACCTTGGGGT

6
ACCGCCCTTGGGAGCTTGGAGACACCGGGCCGGAGCGTCCGCGCTAGGCTTCTGGCCAG
AGGAGGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGCAGTAAGAACAAAGCT
CAAATCACTCCAATAGCGGCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTACGGCTGG
CTACAGCGGGGAGACATTTATCACAGCGTGTCTCATGCCCGGCCCGCTGGATCTGGTT-9300
TTGCTACTCTGCTTGTGCAAGGGGTAGGCATCTACCTCCTCCCAACCGATGAAGGTT
GGGGTAAACACTCCGGCT-----3' terminus

Some clonal heterogeneities producing amino acid
substitutions are shown. There are many other
"silent mutations (not shown).



FIG. 90A

R T
MSTNPKPQKKNKRNTRRRQDVKFPGGGQIVGGVYLLPRRGPRLGVRATR
KTSERSQPRGRRQPIPKARRPEGRWAQPGYPWPLYGNEGCGWAGWLLSP-100
RGSRPSWGPTDPRRRSRNLGKVIDTLTCGFADLMGYIPLVGAPLGGAARA

T
LAHGVRLVEDGVNYATGNLPGCSFSIFLLALLSCLTVPASAYQVRNSTGL-200
YHVTNDCPNSSIVYEAADAILHTPGCVPCVREGNASRCWVAMTPTVATRD
GKLPATQLRRHIDLLVGSATLCSALYVVDLCGVSFVLVGQLFTFSPRRHWT-300

V
TQGCNCIYPGHITGHRMAWMMNWSPTTALVMAQLLRIPQAILDMIAG
AHWGLAGIAYFSMVGNWAKVLVLLFAGVDAETHVTGGSAGHTVSGFV-400
SLLAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWLAGLFYHHKFNS
GCPERLASCRPLTDFDQGWGPISYANGSGPDQRPYCWHYPPKPCGIVPAK-500
SVCGPVYCFTSPVVGTTDRSGAPTYSWGENDTDFVLNNTRPPLGNWF
GCTWMNSTGFTKVCGAPPCVIGGAGNNTLHCPTDCFRKHPDATYSRCGSG-600

I
PWLTPRCLVDYPYRLWHYPCTINYTIFKIRMYVGGVEHRLEAACNWTRGE
RCDLEDNRSELSPLLLTTTQWQVLPSCFTTLPALSTGLIHLHQNIVDVQ-700
YLYGVGSSIASWAIKWEYVLLFLLADARVCSCWMLLISQAEAALEN
LVILNAASLAGTHGLVSFLVFFCFAWYLGKWPVAVYTFYGMWPLLLLL-800

(N)
LALPQRAYALDTEVAASC GGVLVGLMALTSPYYKRYISWCLWWLQYFL
TRVEAQLHVWIPPLNVRGGRDAVILLMCAVHPTLVFDITKLLAVFGPLW-900
ILQASLLKVPYFVRVQGLLRFALARKMIGGHYVQMVIIKLGALTGTYY
NHLTPLRDWAHNGLRDLAVAVEPVVFSQMETKLITWGADTAACGDIINGL-1000
PVSARRGREILLGPADGMVSKGWRLAPITAYAQQTRGLLGCITSLTGR
DKNQVEGEVQIVSTAAQTFLATCINGVCWTVYHGAGTRTIASPKGPVIQM-1100

S T
YTNDQDLVGWPAPQGSRLTPCTCGSSDLYLVTRHADVIPVRRRGDSRG
SLLSPRPISYLGSSGGPLLCPAGHAVGIFRAAVCTRGVAKAVDFIPVEN-1200
LETTMRSPVFTDNSSPPVVPQSFQVAHLHAPTGSKGSTKVPAAYAAQGYK

L
VLVLNPSVAATLGFAYMSKAHGIDPNI RTGVRTITTGSPITYSTYGKFL-1300
ADGGCSGGAYDIIICDECHSTDATSILGIGTVLDQAETAGARLVVLTAT
PPGSVTVPHPNIEEVALSTTGEIPFYGKAIPLEVIKGGRHILFCHSKKKC-1400
DELAALVALGINAVAYYRGLDVSVIPTSGDVVVVATDALMTGYTGDFDS

Y (S)
VIDCNTCVTQTVDFSLDPTFTIETITLPQDAVSRTQRRGRTGRGKPGIYR-1500
FVAPGERPSGMFDSSVLCEDAGCAWYELTPAETTVRLRAYMNTPLPV
CQDHLEFWEGVFTGLTHIDAHFLSQTQSGENLPYLVAQATVCARAQAP-1600
PPSWDQMWKCLIRLKPTLHGPTPLLYRLGAVQNEITLTHPVTKYIMTMS
ADLEVVTSTWVLVGGVLAALAYCLSTGCVVIVGRVVLGKPAIIPDREV-1700
LYREFDEMEECQHLPIEQGMMLAEQFKQKALGLLQASRQAEVIAPAV
QTNWQKLETFWAKHMMNFISGIQYLAGLSTLPGNPAIASLMAFTAAPTSP-1800
LTSQTLLFNILGGWAAQLAAPGAATAFVGAGLAGAAIGSVGLGKVLID



FIG. 90B

(G)
ILAGYGAGVAGALVAFKIMSGEVPSTEDLVNLLPAILSPGALVVGVCVCA-1900

(HC)
ILRRHVGPGEAVQWMNRLIAFASRGNHVSPTHYVPESDAAARVTAISSL
LTVTQLLRRLHQWISSECTTPCSGSWLRDIWDWICEVLSDFKTWLKAKLM-2000

(V)
PQLPGIPFVSCQRGYKGVWRGDGIMHTRCHCGAEITGHVKNGTMRIVGPR
TCRNMWSGTFPINAYTTGCTPLPAPNYTFALWRVSAEEYVEIRQVGDH-2100
YVTGMTDNLKCPQVPSPEFFTELDGVRHLRFAPPCKPLREEVSFRVG
LHEYVGSQLPCEPEPDVAVLTSMLTDPSHITAEAGRRRLARGSPPSVAS-2200
SSASQLSAPSLKATCTANHDSFDAELIEANLLWRQEMGGNITRVESENKV
VILDSFDPLVAEEDEREISVPAEILKSRRAQALPVWARPDPNPPLVET-2300

(S)
WKKPDYEPVHVHGCPLPPKSPVPPPRKKRTVVLTSTALAEATR

(FA)
SFGSSSTSGITGDNTTSSSEPAPSGCPPDSDAESYSSMPLEGEPPDL-2400
SDGSWSTVSSEANAEDVCCSMSYSWTGALVTPCAEEQKLPINALSNL
LRHNLVYSTTSRSACQRQKVTDFRLQVLDVSHYQDVLKEVKAASKVKA-2500

(F)
NLLSVEEACSLTPPHSAKSKFGYGAQDVRCARKAVTHINSVWKDLEDN
VTPIDTTIMAKNEVFCVQPEKGGKPARLIVFPDLGVRVCEKMAFYDVT-2600
KLPLAVMGSSYGQYSPGQRVFLVQAWKSKKTPMGFSYDTRCFDSTVTE

(G)
SDIRTEEAITYCCDLDPQARVAIKSLTERLYVGGPLTNSRGENCYRRCR-2700
ASGVLTTCGNTLTCTYIKARAACRAAGLQDCTMLVCGDDLVCESAGVQ
EDAASLRAFTEAMTRYSAAPPDPPQPEYDLELITSCSSNVSVAHGAGKR-2800
VYYLTRDPTTPLARAAWETARHTFVNSWLGNIMFAPTLWARMILMTHFF
SVLIARDQLEQALDCEIYGACYSIEPLDLPPIIQRHLGLSAFSLHSYSPG-2900

G
EINRVAACLRKLGVPPLRAWHRARSVRARLLARGGAAICGKYLFWAV

(P)
RTKLKLTPIAAAGQLDLGWFTAGYSGGDIYHSVSHARPRWIWFCLLLLA-3000
AGVGIYLLPNRO-3011

Stop codon

() = Heterogeneity due possibly
to 5' or 3' terminal cloning
artefact.

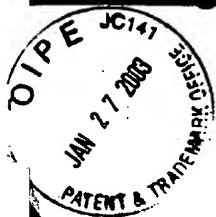


FIG. 91

